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ARMY INDUSTRIAL BASE ENGINEERING ACTIVITY ROCK ISLAND IL F/G 5/2  
MANUFACTURING METHODS AND TECHNOLOGY PROGRAM PROJECT STATUS REP--ETC(U)  
OCT 78 H E WEIDNER, L S HANCOCK

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U.S. ARMY  
MATERIEL DEVELOPMENT  
AND READINESS COMMAND

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**(12)<sup>SC</sup> LEVEL**  
**M**ANUFACTURING  
**M**ETHODS &  
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**SEMIANNUAL REPORT**

FIRST CY 78

(RCS DRCMT-301)

PREPARED BY

78 10 24 074

OCTOBER 1978

**USA INDUSTRIAL BASE ENGINEERING ACTIVITY**

MANUFACTURING TECHNOLOGY DIVISION

ROCK ISLAND, ILLINOIS 61299





DEPARTMENT OF THE ARMY  
US ARMY INDUSTRIAL BASE ENGINEERING ACTIVITY  
ROCK ISLAND, ILLINOIS 61299

DRXIB-MT

SUBJECT: Manufacturing Methods and Technology Program Project Status  
Report, First Half CY78

SEE DISTRIBUTION

1. Reference is made to paragraph 3-8e(1) of AR 700-90, C1, Logistics, Army Industrial Preparedness Program, dated 10 March 1977.
2. This Semiannual Report is a summary compilation of the MANTECH/MMT Program Project Status Reports (RCS DRCMT-301) submitted to IBEA from DARCOM major subordinate commands and project managers. The document is used as a management tool for monitoring the progress of MMT projects.
3. Persons who are interested in the details of an individual project should contact the MT representative at the SUBMACOM. A list of those representatives is included in an appendix to this report.
4. This report represents an application of the automated information system developed by IBEA. The computerization of this report has resulted in a more accurate document in a more timely fashion. The project officers for this task were Ms. L. S. Hancock and Mr. H. E. Weidner, Autovon 793-6521.

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# INTRODUCTION

## BACKGROUND

The Army Manufacturing Methods and Technology (MMT) Program was established in 1964 as a part of the Army Production Base Support (PBS) Program. The MMT Program has goals of improving existing manufacturing technology, translating new technology into production line processes, and supporting the modernization and expansion of the military hardware production base. Army Regulation AR 700-90, C1, paragraph 3-6, describes the objectives of the MMT Program as follows:

To develop, on a timely basis, manufacturing processes, techniques, and equipment for use in production of Army materiel. In achieving this objective, strong consideration will be given to efforts that insure producibility, reduce costs or lead times, relieve critical materiel/materials shortages, enhance safety, provide for abatement of pollutants, improve product quality and reliability, and advance the state-of-the-art in manufacturing methods and equipment.

## AUTHORIZATION

This MMT Semiannual Report provides the status summaries of 541 active projects with an authorized cost of \$259,841,100. The report is compiled, edited, and published for HQ, DARCOM by the Manufacturing Technology Division of the Army Industrial Base Engineering Activity (IBEA) according to AR 700-90, C1, paragraph 3-8e(1).

The distribution of this report is extended to Army materiel developers and users and to counterparts in the Navy and the Air Force. Inquiries on the detailed technical aspects of any individual project may be answered by the MMT Program representative of the action command under which the project was completed or is being executed. Inquiries or suggestions may also be directed to the Manufacturing Technology Division of IBEA.

## COMPOSITION OF THE REPORT

The report is composed of two major sections:

Overall Program Status. A summary of important information that relates to the overall DARCOM program. The section includes statistics on the number of projects which were added and completed, changes in funding and data on allocations and expenditures of funds.

Summary Project Status Report. These reports are divided by organization and include a summary of funding by fiscal year and a narrative status for each project.

MMT PROGRAM  
OVERALL PROGRAM STATUS



## PROGRAM STATISTICS



PROGRAM SUMMARY

ACTIVE PROJECTS

FUNDING ALLOCATION

FUNDING EXPENDITURE



## PROGRAM STATISTICS

The overall MMT project reporting and funding status for the first half of CY78 is presented on the next eight pages. These tabulations include data for the DARCOM Major Subordinate Commands that have active projects and the AMMRC & DARCOM sponsored projects. The summaries provide cumulative figures relative to the number of projects by fiscal years, and distribution and expenditures of funds on contract and in-house. The projects that were completed during this report period are also included in these summaries since they were active during a portion of the period.

Additional efforts were expended during this report period to reduce the number of delinquent status reports. This included a reminder letter and extensive follow-up by telephone, however these efforts were largely ineffective in reducing the number of delinquent reports. There were 21 delinquent reports for this period. For the next report period, additional efforts will be concentrated on those projects that were delinquent. The goal for the 2nd Half CY78 Semiannual report is no more than 10 delinquencies.

# MM&T PROGRAM SUMMARY

| Organization              | Number of Projects |             |          | Funding Status  |               |          |
|---------------------------|--------------------|-------------|----------|-----------------|---------------|----------|
|                           | Previous Period    | This Period | % Change | Previous Period | This Period   | % Change |
| AVRADCOM                  | 65                 | 56          | - 14     | \$ 20,104,700   | \$ 19,625,100 | - 2      |
| CORADCOM                  | 9                  | 9           | 0        | 4,081,900       | 4,070,100     | 0        |
| ERADCOM                   | 56                 | 45          | - 20     | 28,498,400      | 21,170,700    | - 26     |
| MIRADCOM/MIRCOM           | 50                 | 70          | + 40     | 20,130,800      | 27,101,500    | + 35     |
| TARADCOM/TARCOM           | 21                 | 27          | + 29     | 3,748,000       | 5,871,000     | + 57     |
| ARRADCOM/ARRCOM (Ammo)    | 200                | 225         | + 12     | 129,400,000     | 144,619,400   | + 12     |
| ARRADCOM/ARRCOM (Weapons) | 68                 | 68          | 0        | 48,000          | 10,606,200    | + 5      |
| MERADCOM                  | 8                  | 19          | +137     | 1,970,000       | 4,313,000     | +118     |
| NARADCOM                  | 5                  | 4           | - 20     | 1,163,100       | 853,100       | - 27     |
| TECOM                     | 4                  | 4           | 0        | 2,408,000       | 2,489,000     | + 3      |
| AMMRC/DARCOM              | 13                 | 14          | + 8      | 14,371,000      | 19,122,000    | + 33     |
| TOTAL                     | 499                | 541         | + 8      | \$236,304,600   | \$259,841,100 | + 10     |

The MM&T Program Summary indicates that the active projects have increased by about 10% during this semiannual period. The bulk of this increase was in the missile and ammunition area although percentagewise MERADCOM had the largest increase. Most of the FY78 projects that will be funded are now included in this report. Approximately 25 additional FY78 projects are anticipated to be funded. The command listing has been realigned to agree with the present DARCOM organizational structure. Values for the previous period have been redistributed where required to correspond with the new organization.

ACTIVE PROJECTS  
BY  
FISCAL YEAR

| Organization                 | 70 | 71 | 72 | 73 | 74 | 75 | 76  | 7T | 77  | 78  | TOTAL |
|------------------------------|----|----|----|----|----|----|-----|----|-----|-----|-------|
| AVRADCOM                     |    | 1  | 0  | 1  | 5  | 9  | 11  | 0  | 13  | 16  | 56    |
| CORADCOM                     |    |    | 1  | 0  | 0  | 0  | 5   | 0  | 1   | 2   | 9     |
| ERADCOM                      | 1  | 0  | 0  | 0  | 1  | 6  | 14  | 0  | 17  | 6   | 45    |
| MIRADCOM/MIRCOM              |    |    |    |    |    | 1  | 12  | 6  | 19  | 32  | 70    |
| TARADCOM/TARCOM              |    |    |    |    | 1  | 3  | 4   | 0  | 8   | 11  | 27    |
| ARRADCOM/ARRCOM<br>(Ammo)    | 1  | 1  | 1  | 4  | 15 | 27 | 58  | 20 | 50  | 48  | 225   |
| ARRADCOM/ARRCOM<br>(Weapons) |    |    |    | 2  | 3  | 9  | 9   | 0  | 29  | 16  | 68    |
| MERADCOM                     |    |    |    |    |    | 2  | 5   | 0  | 4   | 8   | 19    |
| NARADCOM                     |    |    |    |    | 1  | 0  | 2   | 0  | 1   | 0   | 4     |
| TECOM                        |    |    |    |    |    |    | 1   | 1  | 1   | 1   | 4     |
| AMMRC/DARCOM                 |    |    |    |    | 2  | 2  | 3   | 2  | 3   | 2   | 14    |
| TOTAL                        | 2  | 2  | 2  | 7  | 28 | 59 | 124 | 29 | 146 | 142 | 541   |

The median fiscal year for these projects is now between 71 and 77 whereas during the previous report it was between 76 & 71. This median movement was primarily due to the addition of new FY78 projects. At the end of this report period one each of the FY70 and 71 projects shown above were closed out. There are 3 fewer FY72 projects, 5 fewer 73 projects, and 16 fewer 74 projects so there does appear to be some attempt at closing out these overdue projects. During this report period there were 100 projects that were more than 3 years old. This amounts to 18% of the total projects.



**PROGRAM FUNDING ALLOCATIONS**  
**(MILLIONS)**

| Organizations                | No.<br>Projects | Authorized<br>Funds | Contractor<br>Allocated | In-House<br>Allocated |
|------------------------------|-----------------|---------------------|-------------------------|-----------------------|
| AVRADCOM                     | 56              | \$ 19.6             | \$ 14.4 (73%)           | \$ 5.2 (26%)          |
| CORADCOM                     | 9               | 4.1                 | 3.2 (78%)               | 0.9 (22%)             |
| ERADCOM                      | 45              | 21.2                | 15.4 (73%)              | 5.7 (27%)             |
| MIRADCOM/MIRCOM              | 70              | 27.1                | 14.8 (55%)              | 12.3 (45%)            |
| TARADCOM/TARCOM              | 27              | 5.9                 | 1.7 (29%)               | 4.1 (71%)             |
| ARRADCOM/ARRCOM<br>(Ammo)    | 225             | 144.6               | 64.3 (44%)              | 80.3 (55%)            |
| ARRADCOM/ARRCOM<br>(Weapons) | 68              | 10.6                | 4.2 (40%)               | 6.4 (60%)             |
| MERADCOM                     | 19              | 4.3                 | 3.0 (70%)               | 1.3 (30%)             |
| NARADCOM                     | 4               | 0.9                 | 0.6 (75%)               | 0.2 (24%)             |
| TECOM                        | 4               | 2.5                 | 0.2 ( 9%)               | 2.3 (91%)             |
| AMTRC/DARCOM                 | 14              | 19.1                | 2.6 (13%)               | 16.6 (86%)            |
| <b>TOTAL</b>                 | <b>541</b>      | <b>\$259.8</b>      | <b>\$124.7 (48%)</b>    | <b>\$135.7 (52%)</b>  |

The purpose of this chart is to indicate the distribution of project funds between contractors and in-house. The current report indicates slightly more funds in-house than are on contract. Since there has been insufficient time for the awarding of contracts an unusually large proportion of the FY78 funds are still in-house. The final distribution of funds will again indicate slightly more funding on contract. There does not appear to be a trend towards movement of funds in either direction for the program as a whole. A command by command comparison of similar percentages from the previous semiannual report indicates only moderate variations.

PROGRAM FUNDING EXPENDITURES  
(MILLIONS)

| Organization                 | No.<br>Projects | Authorized<br>Funding | Contractor |              | In-House  |              |
|------------------------------|-----------------|-----------------------|------------|--------------|-----------|--------------|
|                              |                 |                       | Allocated  | Expended     | Allocated | Expended     |
| AVRADCOM                     | 56              | \$ 19.6               | \$ 14.4    | \$ 6.6 (45%) | \$ 5.2    | \$ 2.5 (46%) |
| CORADCOM                     | 9               | 4.1                   | 3.2        | 1.5 (47%)    | 0.9       | 0.3 (28%)    |
| ERADCOM                      | 45              | 21.2                  | 15.4       | 7.7 (49%)    | 5.7       | 1.4 (24%)    |
| MIRADCOM/MIRCOM              | 70              | 27.1                  | 14.8       | 8.2 (55%)    | 12.3      | 3.0 (24%)    |
| TARADCOM/TARCOM              | 27              | 5.9                   | 1.7        | 0.6 (33%)    | 4.2       | 1.5 (36%)    |
| ARRADCOM/ARRCOM<br>(Ammo)    | 225             | 144.6                 | 64.3       | 43.9 (68%)   | 80.3      | 46.8 (58%)   |
| ARRADCOM/ARRCOM<br>(Weapons) | 63              | 10.6                  | 4.2        | 1.6 (38%)    | 6.4       | 3.9 (60%)    |
| MERADCOM                     | 19              | 4.3                   | 3.0        | 1.8 (58%)    | 1.3       | 0.4 (30%)    |
| NARADCOM                     | 4               | 0.9                   | 0.6        | 0.4 (61%)    | 0.21      | 0.17 (79%)   |
| TECOM                        | 4               | 2.4                   | 0.2        | 0.1 (49%)    | 2.3       | 1.3 (58%)    |
| AMMRC/DARCOM                 | 14              | 19.1                  | 2.6        | 2.4 (93%)    | 16.6      | 10.4 (62%)   |
| TOTAL                        | 541             | \$259.8               | \$124.4    | \$74.8 (60%) | \$135.4   | \$71.7 (53%) |

The purpose of this chart is to indicate at what rate the funds are being expended both on contract and in-house. The expenditure rate is slightly lower than during the previous semiannual period due primarily to the new FY78 projects that have been added. A command by command comparison does not indicate any unusual changes. MIRADCOM/MIRCOM shows a substantial drop in funds expended. This was caused by a large number of new projects.

## PROJECTS ADDED IN FIRST HALF, CY78

### TECOM

- 0 78 5071 TECOM PRODUCTION TEST METHODOLOGY ENGINEERING MEASURES  
Artillery, vehicle and electronic conventional test capabilities need to be upgraded to provide more timely accurate test data for the test and evaluation process.

### AVRADCOM

- 1 78 7123 IN PROCESS TECHNIQUES FOR CONTINUOUS BALANCING SHAFTING  
Existing balancing techniques for shafting are difficult and costly, requiring many trial speed runs to establish the proper balance.
- 1 78 7155 COST EFFECTIVE MFG METHODS FOR IMPROVED HELICOPTER GEARS  
Demand in helicopter operation of greater reliability of high performance gears at lower cost has required that improved processing and evaluation techniques be instituted.
- 1 78 7287 MULTI-ELEMENT MODULES FOR ARRAY ANTENNAS  
Phased array antennas are typically very expensive. As a result mechanically scanned antennas have been preferred however this restricts the requirements that a radar can satisfy due to the slower scan speed of these antennae.

### ARRADCOM-ARRCOM (AMMO)

- 8 78 1296 MANUFACTURING OF CB FIBERS  
Existing filter production facilities are obsolete, inefficient and expensive to operate.
- 5 78 1320 PILOT STATIONS FOR FILLING & CLOSING IMPROVED WP MUNITION  
The present smoke obscuration capability of the Army contains significant gaps and functional deficiencies in present munitions inventories and supporting technology.
- 8 78 1335 MANUFACTURING TECHNOLOGY FOR NEW PROTECTIVE MASK  
Existing filter production facilities are obsolete, inefficient and expensive to operate.
- 8 78 1339 MANUFACTURING TECHNOLOGY FOR PREPARATION OF B-1 DYE  
Due to the carcinogenic properties of a chemical intermediate, B-N Aphthylaniene used in preparation of B-1 dye. No commercial source will provide the dye for use as a liquid agent detector.



PROJECTS ADDED IN FIRST HALF, CY78 (Continued)

- 5 78 1345 FOR BIOLOGICAL WARNING SYSTEM  
There is no biological agent detector mass production capability.
- 5 78 3907 MNOS COUNTER-MEMORY CIRCUIT FOR FUZES  
There is no production capability for the low cost long-lead-time counter-memory circuits for XM587. Initial fuze production is scheduled for FY78-79.
- 5 78 3947 THICK FILM HYBRID CIRCUIT FOR FUZES  
High cost is anticipated for two hybrid circuits used in the XM587/XM724 fuzes due to extensive hand labor and low yield.
- 5 78 4000 AUTOMATED M55 DETONATOR LOADING EQPT  
Current production facilities lack versatility, present quality problems and are costly to operate and maintain.
- 5 78 4041 DEV OF AUTOMATED EQUIPMENT FOR ASSY OF MORTAR AMMO  
The manual LAP of the 60MM, XM204 MOD 2 and the 81 MM, XM205 propelling charges is costly and subject to poor quality product.
- 5 78 4139 APPLIC OF RADAR TO BALLISTIC ACCEPT TEST OF AMMO (ARBAT)  
Terminal ballistic data gathered by visual and aural observation results in erroneous, inadequate, and missing data. Critical decision must then be made with insufficient or incorrect information.
- 5 78 4148 REDUCED WEIGHT FORGING F/8 INCH MOTOR BODY  
The present forging weighs 103 lbs. and requires extensive machining in the aft Trepan area.
- 5 78 4149 LOADING OF 30MM ADEN/DEFA HEDP AMMUNITION  
Present processer for projectile fabrication, shaped charge liner fabrication and projectile loading is tailored for costly low volume production.
- 5 78 4150 NEW MFG PROCEDURE FOR SAWS AMMO  
No economical method for production of saws ammo.
- 5 78 4153 INERTIA WELDER FOR THE M509 AND M483 PROJECTILES  
The machine developed by Chamberlain Corporation does not have the design capability to achieve acceptable welding.
- 5 78 4214 POLLUTION ENGINEERING FOR 1983-85 REQUIREMENTS  
The federal regulations for environmental control are changing and becoming more stringent for 1983 and 1985.

PROJECTS ADDED IN FIRST HALF, CY78 (Continued)

- 5 78 4228 AUTO BAG LOADING/CHARGE ASSEMBLY & PACKOUT-155MM/8 IN  
Final assembly and loading of the 155MM and 8" propelling charges need updating for cost effectiveness and for mobilization capabilities. These have been primarily manual operations.
- 5 78 4237 CONTINUOUS TNT PROCESS ENGINEERING  
Current CIL process requires process and safety improvements.
- 5 78 4249 SEPARATION OF EXPLOSIVES FROM SPENT ACID/WATER SLURRIES  
Separation of explosive fines from spent acid streams and water slurries cannot be effectively accomplished on the plant scale with existing methods, rate of recovery is too small by present efforts.
- 5 78 4252 IMPROVE PRESENT PROCESSES FOR THE MANUFACTURE OF RDX & HMX  
Process variables have never been optimized in the RDX - HMX mfg process, reactant concentrators, temperature and time of reaction and procedures such as recycling or reaction filtrate need to be examined.
- 5 78 4263 AUTO PILOT LINE FOR CONTROLLED COOL/PROCESSING HE LOAD PROJ  
Controlled cooling and processing of HE produced on a continuous basis is important to the modernization program.
- 5 78 4267 CONTINUOUS PROCESS FOR GRANULAR COMPOSITION B  
The batchwise cooling process of RDX/TNT/WAX slurry allows only a limited control of granulation.
- 5 78 4281 CONSERVATION OF ENERGY AT AAPS  
Reduce energy consumption at ammunition plants.
- 5 78 4285 TNT EQUIV TESTING FOR SAFETY ENGINEERING  
Present criteria for blast resistant structures is in terms of surface burst of hemispherical TNT. In structural design, to protect from the output of other energetics. The designers must have data pertinent to the material in question.
- 5 78 4288 EXPLOSIVE SAFE SEPARATION AND SENSITIVITY CRITERIA  
Information is required to upgrade processes and facilities to provide max safety by the development on safe distances between explosive and end items to determine safe depth of explosives and to determine sensitivity criteria.
- 5 78 4341 AUTOMATED EQUIPMENT FOR ASSY OF MORTAR IGNITION CARTRIDGES  
Manual type operations for the production of ignition cartridges have resulted in low levels of quality, safety, and high costs.
- 5 78 4349 MOD OF PRESS LOADING FOR HEP PROJECTILES  
Labor intensive loading with wasteful increments and machining of excess explosives.

PROJECTS ADDED IN FIRST HALF, CY78 (Continued)

- 5 78 4431 AUTOMATED EQUIP FOR MORTAR IGNITION CARTRIDGES  
Production of ignition cartridges for mortars is basically a manual operation which exhibits low level production quality, safety, and high cost characteristics.
- 5 78 4444 BODY FOR M42/M46 GRENADE  
Present methods for producing M42 and M46 grenades are costly.
- 5 78 4447 NITROGUANIDINE PROCESS CONTROL ANALYTICAL SYSTEMS  
The need exists to provide the analytical methods for process control and product assurance.
- 5 78 4449 PROCESS IMPROVEMENT IN DRYING/COATING OF RDX COMPOSITIONS  
The existing facilities which are common to the manufacture of comp B and the other RDX composition would limit the availability of these items below their MOB requirements.
- 5 78 4454 AUTOMATIC INSPECTION DEVICE EXPLOSIVE CAST IN SHELL  
Currently conventional film radiography characterizes by cost of film and high personnel costs is used for detection of defects in explosive casts. This is not only costly but involves the questionable reliability of human interpretation.
- 5 78 4466 EVAL TNT, CYCLOTOL, AMATEX, OCTOL WITH PA MELT-POUR FACIL  
The melt/pour explosive fill equipment was designed for the Army's preferred fill, Comp B, with little regard for the application of this equipment to the alternate explosive fills.
- 5 78 4469 AUTOMATED INSERTION OF GRENADE LAYERS  
The manual insertion grenade layers into projectiles is a highly manual, costly and hazardous operation.
- 5 78 4472 DEV OF EQUIPMENT FOR QUTO FAB OF CENTER CORE PROP BAGS  
Manufacturing of center core prop bags is a long, time consuming, piecemeal process which is very costly.
- 5 78 4498 MT FOR CONSOLIDTN & AUTO ASSEMBLY OF SMALL MINES  
Off-line operations and multiple handling is required for the preeminately manual lap operations.
- 5 78 4508 PROCESS IMPROVEMENTS FOR PRESSABLE RDX COMPOSITIONS  
Present production methods for pressable RDX Compositions necessitates the use of facilities which will be required for Comp B mfg during mobilization.
- 5 78 6596 BALL PROPELLANT PILOT PLANT STUDIES  
A pilot facility with variable control systems is needed, because current engineering work must be performed on production lines when available, and conflicts with productive operations.
- 5 78 6634 MFG DU ALLOYS FOR LARGE CALIBER ARMOR DEFEATING PROJECTILE  
Depleted uranium is pyrophoric and requires care in machining and/or grinding to finish configuration. . . . .

PROJECTS ADDED IN FIRST HALF, CY78 (Continued)

- 5 78 6654 NDT FOR QC IN MFGR OF ADVANCED FRAGMTG STEEL SHELL  
The Army does not have a NDT System with the flaw detection and discrimination capability needed to insure the safety of high fragmentation artillery projectiles.
- 5 78 6681 OPTIMIZE PARAMETERS FOR PROD SHEAR FORMING OF PROJECTILES  
Current methods of fabrication for artillery projectiles use conventional forging and drawing practices which require extensive machining.
- 5 78 6683 PRODUCTION OF TUNGSTEN BASE ALLOY PENETRATORS FOR AP MUNIT  
Processing technology and production engineering data for the fabrication of Tungsten alloy penetrators is needed.
- 5 78 6693 BALL PROPELLANT DETERRENT COATING-CAM RELATED  
The deterrent coating step in ball propellant manufacture produces a product that demonstrates significant ballistic variability from batch to batch.
- 5 78 6725 AUTOMATED INERTIA BANDING MACHINE FOR ARTILLERY MUNITIONS  
Gas metal arc welding - GMAWI is presently used for welding overlays for rotating bands, may be overly expensive and requires skilled operators.
- 5 78 6736 TECH READINESS ACCEL THRU COMPUTE INTEGRATED MFG (TRACIM)  
Lead time to bring munition production lines to mobilization levels is excessive. Non-availability of technical skills (tool makers and machinists) and up-to-date on item description. Manufacturing process, tool designs, gages, fixtures, and facilities.
- 5 78 6748 SCAMP POLLUTION ABATEMENT  
The pollutants produced by scamp lines have been investigated under a project 57X 4114. Subproject F2. When complete, in FY77, a recommended abatement system will result. This system must be tested.
- 5 78 6753 METHODS FOR ORIENTING & FEEDING SMALL CALIBER AMMO  
The existing batch process used slow parts feeders. Feeders initially developed for the 5.56MM mod program have had mechanical problems and have not achieved the required efficiency.
- 5 78 6760 DRYING LOW DENSITY BALL PROPELLANT  
Low density ball propellant is low in weight, high in moisture content and more hazardous than conventional ball propellant thus creating a number of problems in drying process.
- 5 78 6774 MFG METHODS FOR ADPS PROJECTILE (25MM)  
The existing process for manufacturing the 25MM (MICV) APDS projectile are inefficient and labor intensive. The present methods cannot meet required production rates.



PROJECTS ADDED IN FIRST HALF, CY78 (Continued)

ARRADCOM-ARRCOM (WPNS)

- 6 78 3901 MANUFACTURE OF FLUIDIC AMPLIFIERS BY COLD FORMING  
Present methods of manufacturing fluidic amplifiers are costly as they require 100% inspection because of unsatisfactory repeatability in dimensions and finishes.
- 6 78 7649 COMPUTERIZED POWDER METALLURGY FORGING DESIGN-CAM  
In the overall process design for P/M forging, preform design is most difficult and relies on a trial-and-error approach.
- 6 78 7655 APPLICATION OF THERMOARC SPRAY WEAR COATINGS  
Lightweight alloy components have inadequate wear resistance.
- 6 78 7710 INJECTION MOLDING OF RUBBER OBTURATOR PADS  
The high cost of the standard neoprene rubber obturator pad for 155MM cannon, is due largely to the long, two hour cure required in the compression molding operation.
- 6 78 7716 PROTOTYPE PROD LINE FOR PRESSURE PHOSPHATE COATINGS  
Conventionally phosphated military items experience less than five hours salt spray corrosion resistance.
- 6 78 7741 INSPECTION INSTRUMENTATION FOR FIRE CONTROL INSTRUMENTS  
Equipment to align and calibrate test fixtures used in inspection of fire control instruments cannot accurately determine instrument linearity and angular motion with out probability of significant error.
- 6 78 7743 APPLICATION OF ANTI-FOG CONDUCTIVE FILMS  
Exposed optical elements of tracking and sighting optical systems fog in a rapid temperature change environment.
- 6 78 7747 INJECTION MOLDED PLASTIC FOAMS FOR SMALL ARMS APPLNS  
M16 butt stock are relatively expensive to fabricate because two different molding operations are required.
- 6 78 7802 ESTABLISH MACHINE TOOL PERFORMANCE SPECIFICATIONS  
Performance capability of production machine tools is not known.
- 6 78 7807 PROGRAMMED OPTICAL SURFACING EQUIP AND METHODOLOGY-CAM  
Production quantities required for any given military optic are small. Thus, cost saving possibilities of mass production are not available and other means of cost reduction must be sought.
- 6 78 7808 LEAK DETECTION TECHNIQUES FOR SMALL SEALED FIRE CON ASSY  
Leak testing by standard pressure testing methods on small sealed fire control assemblies is difficult, far from precise and does not provide the desired confidence level.
- 6 78 7814 SYNTHETIC QUENCHANT FOR HEAT TREATING WEAPON COMPONENTS  
Conventional quenchants have limited cooling rates, pose safety and health hazards, and pollute the environment.



PROJECTS ADDED IN FIRST HALF, CY78 (Continued)

- 6 78 7825 ELIMINATION OF FACILITATING HONING OPERATIONS  
Improved techniques and equipment can feasibly eliminate certain honing operations thus reduce costs.
- 6 78 7840 PORTABLE MULTI-DEGREE-OF-FREEDOM SIMULATOR  
Deficiencies in automatic cannons mounted on helicopters or armored personnel carriers that arise due to mounting conditions and environmental vibrations are not revealed.
- 6 78 7844 ROOM TEMPERATURE PHOSPHATING  
The present phosphating process must be done at high temperatures and is energy intensive.
- 6 78 7943 ANALYSIS FOR MODERNIZATION OF INDUSTRIAL OPERATIONS  
Rock Island Arsenal requires an effective investment program for production facilities and equipment and a comprehensive facilities modernization plan.
- 6 78 8017 POLLUTION ABATEMENT PROGRAM  
More stringent environmental requirements are being established for air and waste water discharge.

DARCOM

- D 78 5052 ARMY ENGINEERING DESIGN HANDBOOK FOR PRODUCTION SUPPORT  
Technical scientific and engineering data is continually being generated within the Army and needs to be collected in appropriate documents.

MERADCOM

- E 78 3532 MOLTEN SALT LI/CL BATTERY  
Present lead acid and nickel iron batteries often need re-charging in order to complete an eight-hour shift.
- E 78 3587 SLUFAE MINE NEUTRALIZER LAUNCHER  
Successful models of the launch tube for the slufae min neutralizer have been made by hand in the laboratory only (model shop).
- E 78 3604 SOLID STATE POWER SWITCH  
There is no production base for solid state power switch. The nature of this device is such that no manufacturing technology or method exists for the unique assembly requirements.
- E 78 3605 TRANSCALANT (HIGH POWER) TRANSISTOR  
Currently available solid state power devices of required ratings and their heat sinks often are too heavy and bulky to be conveniently used in compact, lightweight power conditioners.

PROJECTS ADDED IN FIRST HALF, CY78 (Continued)

- E 78 3606 250 AMP TRANSCALANT (HIGH POWER) RECTIFIER  
There is no production source available for the transcalant (high power) rectifier for use in solid-state power processing circuits and systems.
- E 78 3613 VEHICLE-MOUNT ROAD MINE DETECTOR SYSTEM ANTENNAS  
The fabrication of these antenna modules is by manual operations and is labor cost excessive.
- E 78 3717 HIGH TEMPERATURE TURBINE NOZZLE FOR 10KW POWER UNIT  
Super alloy metals used in hot components of gas turbines are limited in operating temperature and are subject to premature failure in dusty or corrosive atmosphere. Alloy metals are strategic materials and are costly to manufacture.
- E 78 3749 HYDRAULIC ROTOR ACTUATORS  
The proven configuration has never been produced on a quantity basis. Manufacturing methods for close tolerance and microfinishers are not available

CORADCOM

No New Projects.

ERADCOM

No New Projects.

AMMRC

- M 78 6350 MATERIALS TESTING TECHNOLOGY  
Destructive and certain conventional non-destructive testing techniques are respectively unsuited and inadequate or hard to be adapted to on-line production testing usage.

NARADCOM

No New Projects.

MIRADCOM-MIRCOM

- R 78 3075 INFRARED TESTING OF PC BOARDS AND MICROCIRCUITS  
Structural/electrical flaws in solid state devices used in micro-circuits and printed circuit boards are difficult to detect.
- 3 78 3115 ENGINEERING FOR CALIBRATION EQUIPMENT  
Measurement sciences or metrology must be continually advanced in relevant technology areas to keep pace with many army programs.

PROJECTS ADDED IN FIRST HALF, CY78 (Continued)

- R 78 3121 APPLICATION AND NDT OF LINE PIPE FOR MOTOR COMPONENTS  
Area saturation rocket motor cases are expensive despite their high production volumes.
- R 78 3126 PROCESSING OF LASER OPTICAL CERAMICS BY GRADIENT FURNACE  
The production rate is low and the costs high when producing the laser rods by the present Czochralski process.
- R 78 3133 PROD OF LITHIUM FERRITE PH SHIFTER FOR PHASED ARRAY RADARS  
The garnet presently used in phase arrays is costly, and the manufacturing process is difficult and expensive.
- R 78 3136 IMP. MANUFACTURING PROCESSES FOR COMPLIANT BEARING GRYS  
The present method of manufacture is too expensive for volume production.
- R 78 3147 ADDITIVE PROCESS OF PROCESSING PRINTED CIRCUITS  
The subtractive process of making printed circuits is used almost 100% for DOD applications, this process is a large user of copper and the waste material is difficult to dispose of.
- R 78 3165 PRODUCTION TECHNIQUES FOR SEALING HYBRIDS  
20% of Hybrid reject rate is associated with sealing.
- R 78 3170 REPLACEMENT OF TPH-8156 AND TPH-8159 PROPELLANT  
Replacement of curing agent and resulting propellant have only been produced on Lab scale.
- R 78 3171 AUTO MONITOR AND CONTROL FOR WAVE SOLDERING MACHINES  
3-5 of rejected PCB's are due to improper or uncontrolled wave soldering.
- R 78 3183 IMPROVED PROCESSES FOR INERTIAL GRADE Q-FLEX ACCELEROMETER  
Low yield of Q-Flex accelerometer due to bias stability and scale factor stability.
- R 78 3188 INFRARED IMAGING SEEKERS FOR THERMAL HOMING MISSILES  
Present methods of production and testing require high labor skills.
- R 78 3204 INTERNAL SHEAR FORGING FOR MISSILE PRIMARY STRUCTURE  
The present rolled or die forged stiffening rings for the Pershing missile are excessively expensive.
- R 78 3218 REDUCE FINISHING COST OF SLIP CAST FUSED SILICA RADOMES  
Radome manufacturing costs are high and yield is low.
- R 78 3228 PRODUCTION METHODS FOR EXTRUDABLE HTPB PROPELLANT  
Production of high volume solid composite small caliber rocket motors is time consuming (7 to 14 days).

PROJECTS ADDED IN FIRST HALF, CY78 (Continued)

- R 78 3229 LOW COST DISPOSABLE MANDRELS  
Expensive core mandrels are used to cast solid propellant grains removal is a problem.
- R 78 3253 HI CURRENT DENSITY CATHODE  
Tubes presently being produced for 0.5 - 1.0 amps/cm<sup>2</sup> operations have lifetime ratings of only 3500 hrs.
- R 78 3254 SEMI-FLEXIBLE THIN FILM SEMICONDUCTORS  
Present circuit boards lack the packing density and stringent packaging qualities projected for future missile electronic systems.
- R 78 3372 MFG METHODS FOR MAGNETIC COMPONENTS  
Newer electromagnetic devices with reduced weight and value are beyond the capabilities of present manufacturing processes.
- R 78 3376 TESTING ELECTRO-OPTICAL COMPONENTS AND SUBSYSTEMS  
Manufacturing Technology necessary for large-scale production of electro-optical systems is very limited.
- R 78 3436 DEVELOP CERAMIC CIRCUIT BOARDS AND LARGE AREA HYBRIDS  
Cost is a critical factor in conventional welding associated with the manufacture of high volume missile systems.
- R 78 3440 PRODUCTION TESTING OF CONTROL SYSTEMS FOR GUIDED WEAPONS
- R 78 3441 APPLICATION OF HIGH ENERGY LASER MANUFACTURING PROCESS  
Cost is a critical factor in conventional welding associated with the manufacture of high volume missile systems.
- R 78 3453 GROUND LASER LOCATOR DESIGNATOR PRODUCTION IMPROVEMENTS
- R 78 3453 LO COST - HI VOLUME RADIOGRAPHIC INSPECTION

TARADCOM-TARCOM

- T 78 4264 INSERTS AND FRICTION FILLERS FOR TRACK RUBBER PADS  
Track pads cut and chunk in rocky or frozen ground resulting in reduced pad life and increased costs and maintenance.
- T 78 4575 LASER WELDING TECHNIQUES FOR MILITARY VEHICLES  
No manufacturing baseline exists for welding high strength material by advanced high-speed welding techniques.
- T 78 5014 FOUNDRY CASTING PROCESSES USING FLUID FLOW & THERM ANALYS  
Foundry casting processes are wasteful of raw materials and energy.
- T 78 5017 AUTOMATED WELDING OF ALUMINUM COMBAT VEHICLES  
Manual welding is time consuming and fatiguing.



PROJECTS ADDED IN FIRST HALF, CY78 (Continued)

- T 78 5019 TACTICAL VEHICLE STORAGE BATTERY  
The major cause of tactical vehicle battery failure is battery container breakage.
- T 78 5024 GEAR DIE DESIGN AND MFG UTILIZING COMPUTER TECHNOLOGY (CAM)  
Proper tooth pattern on bevel gears must be made by trial and error.
- T 78 5062 PRODUCTION OR ARMORED VEHICLE VISION BLOCKS  
Fabricate an economically improved ballistic vision device.
- T 78 5064 LIGHTWEIGHT SADDLE TANK  
Fabricate an economical high impact non-metallic fuel tank.
- T 78 5083 UPSCALING OF ADVANCED POWDER METALLURGY PROCESSES  
Powder metals processes have not been utilized in large components.
- T 78 7085 PROD TECH FOR FAB OR TURBINE ENGINE RECUPERATOR  
Current method requires a large number of welds to fabricate component.
- T 78 5097 INTEGRALLY CAST LOW COST COMPRESSOR

TOTAL PROJECTS ADDED IN FIRST HALF, CY78

116



## PROJECTS COMPLETED IN FIRST HALF, CY78

### AVRADCOM

- 1 74 8046 SM COOLED AXIAL TURBINE BLADE DISK/COOLING PLATE FAB (UTTAS)  
Final reports on Phase 1 and 2 are available, fifty 1st stage blades are ready for engine tests. A final report is in printing.
- 1 75 8154 CADAM OF EXTRUSION DIES FOR ALUMINUM, TI AND STEEL PARTS  
Tech report has been reviewed and returned to contractor for printing and distribution. AVRADCOM report no. TR 78-29 and AMMRC Ctr 78-26 have been assigned to the report.

### ARRADCOM-ARRCOM (AMMO)

- 5 76 1296 MT FOR CB FILTERS  
SP2 a vacuum conveyor system was acquired and proven out, SP2 a filling process was finalized. SP3 a contract scope was prepared for evaluating deep bed compaction techniques. SP4 preliminary data for moisture adsorption by charcoal.
- 5 76 1313 ASSESSMENT OF HAZARDS IN PRODUCTION OF PYROTECHNIC COMP  
Assessment completed. Rupture disc suppression reduced hazard from post ignition or burn rate. Friction stimuli must be higher than expected to achieve explosion. Water is less effective than halon. Qty dist facility and shipping costs can diminish.
- 5 76 3062 PELLET THERMAL POWER SUPPLY TECHNOLOGY  
Battery performance was closely grouped with respect to 2.75 rocket specifications, however, extreme performance displayed considerable spread with no clear correlation to process or fabrication parameter variations. Effort continues under 5 76 3062.
- 5 75 3077 PRODUCTION METHODOLOGY FOR VALIDATION OF ELECTRONIC FUZES  
Project completed. The results indicated that a ten module validation facility is technically and economically beneficial. The final report which contains the ten modules detail design has been completed.
- 5 7T 3104 COPPER AMPULES FOR FUZE POWER SUPPLIES  
Union Carbide designed a cartridge and weight assembly machine for the copper ampule. The drawing package was approved for fabrication under the IPF efforts 5 76 3096 and 5 77 6096. Will make, fill and seal copper ampules for PSI 15 for M732 fuzes.

PROJECTS COMPLETED IN FIRST HALF, CY78 (Cont'd)

- 5 76 3104 COPPER AMPULES FOR FUZE POWER SUPPLIES  
Union Carbide designed an ampule assembly machine and designed and built a cutter assembly machine. The latter was built and will be placed in the IPF line. The former will be built on IPF project 5 76 3096 and 5 77 3096.
- 5 7T 3127 MINIATURE BEARINGS AND SHAFT MFR FOR THE XM734 FUZE  
Coil tooling and coil assembly machine design were completed. Final technical report will be issued following MMT project 5 77 3127.
- 5 76 3139 MANF OF INTERCONNECTIONS FOR FLUIDIC CIRCUITS  
The project has been completed. The final report has been written and distributed.
- 5 73 4012 FINAL ROLL MILL/PAD-MAKEUP MACHINE FOR MORTAR INCREMENTS  
Work had previously been completed. A final status report was written during this period. For this project 74% of the funding went towards equipment procurement and 16% went for salaries and fringes.
- 5 74 4013 CONTINUOUS NC MFG BY THE MAG. NITRATE PROCESS  
The work was completed. Pilot plant equipment was installed with this year's funds and debugged. The final technical report was worked on.
- 5 75 4013 CONTINUOUS NC MFG BY THE MAG. NITRATE PROCESS  
Methods of protecting the pilot plant from the effects of sulfuric acid were examined. The pilot plant was prepared for protective storage.
- 5 75 4015 SYSTEM FOR THE AUTOMATED PROCESSING OF BENITE-PROTOTYPE  
A 200BL batch of ingredients transferred successfully to assy. waterjet cutting of strands was recommended. A benite pilot lot was processed thru M490 rounds successfully fired thru 105mm gun at APG. Screw extrusion and acetone solvent raise system safety.
- 5 76 4073 PHOTOFLASH COMPOSITIONS DESENSITIZED BY COATANTS  
A draft of the final technical report has been completed. The photoflash formulation developed performed as well as conventional powders and with improved safety. The formulation will be presented in the final report.
- 5 7T 4105 AUTO INCR LDG + ASSY OF PROP CHGS W/ CENT CORE IGN  
Final status report was prepared during this period. This FY7T effort provided in-house tech support for adequate review and monitoring of Phase 3 (assembly module). The Phase 3 effort was carried out with FY76 funding.

PROJECTS COMPLETED IN FIRST HALF, CY78 (Cont'd)

- 5 77 4139 APPL OF RADAR TO BALLISTIC ACCEPT TEST OF AMMO  
Final report for FY77 effort has been submitted. For status of project 4139 see 5 78 4139 below.
- 5 72 4162 AUTO LINE FOR THE MELT-POUR PROCESSING OF HIGH EXPLOSIVES  
The final report has been prepared and submitted.
- 5 74 4162 AUTO LINE FOR THE MELT-POUR PROCESSING OF HIGH EXPLOSIVES  
The final report has been prepared and submitted.
- 5 74 4165 PROTOTYPE FACILITY FOR RECOVERY OF HMX FROM RDX/HMX ADMIX  
This is the final report. Simmer tanks, slurry pumps and control panel were installed in Bldg D-5 at HAAP, cyclones, hold-up tanks and pumps were installed in Bldg E-4 at HAAP.
- 5 75 4165 PROTOTYPE FACILITY FOR RECOVERY OF HMX FROM RDX/HMX ADMIX  
This is the final report. Equipment installed by prior year project in Bldgs D-5 and E-4 at HAAP were water tested and calibrated. Testing and debugging of the pilot plant was initiated.
- 5 76 4165 PROTOTYPE FACILITY FOR RECOVERY OF HMX FROM RDX/HMX ADMIX  
This is the final report. Debugging of the pilot plant was completed and a parameter study to optimize operation run. Modifications were made in the cyclones. Amount of HMX recovered varied from 34 to 58 lbs and yield varied from 32-64 percent of HM.
- 5 74 4169 ESTABLISHMENT OF IMPROV PROC TO MANUFACTURE NITROGUANIDINE  
A colorimetric method of analysis of nitroguanidine was defined which gives both percentage guanidinium ion and nitroguanidine in the sample. A method for on-stream particle size analysis of feed to the calcium cyanamide kiln was defined also.
- 5 7T 4202 PROTO EQ FOR CONT, AUTO PDN OF SOLVENT TYPE MULTI-BASE PROP  
Processing of M26 on dehy system continued. 20 M26E1 runs were made thru pre-mixer + mixer. Work on cutting M26E1 resulted in poor quality granules. Corrective action is being taken, dehy, pre-mixer, mixer, extruder + cutter were converted f/M30A1.
- 5 73 4202 PROTO EQ F/CONT AUTO PROD OF SOLVENT-TYPE MULTI-BASE PROP  
This project is complete. The final report was prepared.

PROJECTS COMPLETED IN FIRST HALF, CY78 (Cont'd)

- 5 75 4202 PROTO EQ F/CONT AUTO PROD OF SOLVENT-TYPE MULTI-BASE PROP  
M30 NC production runs thru the thermal dehy were completed.  
74 M30 runs were made on the premixer. Work was continued  
on eliminating porosity in the mixer product. 1100 lbs of  
M30 prop was successfully tested in gun firings and closed  
bomb tests.
- 5 76 4202 PROTO EQ F/CONT AUTO PROD OF SOLVENT-TYPE MULTI-BASE PROP  
Work was started in processing M26 NC thru the thermal dehy.  
29 runs of M26E1 prop was made thru the pre-mixer and mixer.  
Initial runs of M26E1 prop were made thru the extruder.  
Feed problems were encountered. Work on M26E1 will continue  
in FY7T.
- 5 71 4205 PROC SPENT ACID FR RDX/HMX FR RECOV OF EXPLOSIVE + ACID  
This is the final report. Ammonia and calcium hydroxide can  
replace sodium hydroxide as neutralizer and causticizer.  
Granular activated carbon can be used to adsorb residual  
explosives from process. N-Propyl acetate is effective for  
RDX/HMX extract.
- 5 74 4205 PROC SPENT ACID FR RDX/HMX FR RECOV OF EXPLOSIVE + ACID  
This is the final report. Installation of a heating and  
circulating loop has resulted in reduction of explosive  
precipitation in the primary evaporator feed tank thereby  
reducing the explosive load limit in the HAAP spent acid  
area (B-LINE).
- 5 74 4263 AUTO PILOT LINE FOR CONTROLLED COOL/PROCESSING HE LOAD PROJ  
Project effort has been completed and final report submitted.
- 5 75 4263 AUTO PILOT LINE FOR CONTROLLED COOL/PROCESSING HE LOAD PROJ  
Project effort has been completed and final report submitted.
- 5 75 4271 IMPROVED PROCESSES TO POLISH, DRY, AND GLAZE BLACK POWDER  
Bench scale studies were successfully completed indicating  
that a pilot plant study should be undertaken as Phase 2.  
Polishing was achieved in 3 minutes and glazing in 15 minutes  
compared to the normal 2 minutes for polishing and 2-4 hrs  
for glazing.
- 5 7T 4288 EXPLOSIVE SAFE SEPARATION AND SENSITIVITY CRITERIA  
No action on individual test programs as total funding was  
utilized for monitoring and coordinating program efforts.
- 5 76 4288 EXPLOSIVE IN PLANT SAFE SEPARATION AND SENSITIVITY CRITERIA  
All 9 final task reports were completed.



PROJECTS COMPLETED IN FIRST HALF, CY78 (Cont'd)

- 5 75 4310 RECRYSTALLIZATION AND GROWTH OF HMX + RDX  
This is the final report. A pilot plant was designed consisting of an evaporator, crystallizer and explosives/solvent separation systems. Equipment was procured and Bldg C-6 at HAAP modified to accommodate the pilot plant.
- 5 76 4310 DMSO RECRYSTALLIZATION OF HMX/RDX  
This is the final report. Installation of the DMSO pilot plant equipment was performed. Hazard analysis of the system was initiated.
- 5 77 4310 DMSO RECRYSTALLATION OF HMX/RDX  
This is the final report. Installation of the DMSO pilot plant equipment and hazard analysis is completed. A late start FY78 project will be submitted to complete thermal insulation of process and service piping and to prove-out/optimize process.
- 5 77 4416 ALTERNATE MFG PROCESS FOR S+A-GEMSS  
Final tests were conducted on the PEP S+A. Based upon results of these tests and tests by the XM75 contractor, the PEP S+A has been included in DT II tests and is anticipated to be type classified in the XM74 + XM75 mines.
- 5 76 4500 MOD TEST TECH FOR IMMED DATA ACQ, REDUC, ANALY, DISSEM, CAM REL  
This project is complete. Final report presented May 78. Action is being taken to implement the information generated in the course of this program.
- 5 77 6553 ADAPT ACOUS ANALY-INSPECT OF WELDED OVERLAY BAND-ARTY SHELL  
Task completed. The production line test of the welded overlay band inspection engineering model and final report was completed Apr 78.
- 5 73 6580 INDUCTION HEAT TREATING OF PROJECTILE SHAPES  
Both scan and static methods for induction heat treating of 8 inch M509 and 155mm M483 projectile bodies were investigated. Both methods were determined to be uneconomical when compared to conventional heat treating systems.
- 5 76 6625 AUTO ASSY + INSPECT LINE FOR BEEHIVE FUZE MOVEMENTS  
Work completed. This project established the machine and tool design for facilities project no. 5 78 6652. Five of the designs completed will be utilized to update prior built machine, facilities project no. 5 78 6652.
- 5 75 6654 NDT METHODS OF QC IN MFG OF ADVANCED FRAG. STEEL SHELLS  
Task complete. Ultrasonic multi-transducer study indicated that cylindrical portions of the 155mm projectile could be automated. The inspection of the base was not successfully accomplished. Magnetic insp. equip. has been successfully dev. and tested.



PROJECTS COMPLETED IN FIRST HALF, CY78 (Cont'd)

- 5 76 6716 DEV MATH MODEL-FORMING OPER FOR CURR/FUTURE ARTY MP DESIGN  
Project is complete. A computer program has been written for establishing optimum nosing parameters.

ARRADCOM-ARRCOM (WPNS)

- 6 75 7111 COMPUTER ASSISTED GRAPHICAL TECHNIQUE FOR PROD OF WEA SYS  
This project is complete. The software is not performing properly thus the system does not have the ability to program the necessary variety and complexities of parts.
- 6 75 7460 ELECTROCHEMICAL MACHINING APPLIED TO DEBURRING + SHAPING  
An electrochemical machining system for the fabrication of howitzer recoil mechanisms was designed, built, tested, and delivered to Rock Island Arsenal.
- 6 75 7550 PROTOTYPE OF PRODUCTION ELECTRO-SLAG REFINING FACILITIES  
Project is complete. It recommends that hollow preforms be incorporated into the next 105mm M68 preform rfq.
- 6 76 7582 PROCESS FOR FABRICATING BI-DENSITY RUBBER WPN COMPONENTS  
No status report was received. Past reports have shown that all the funds have been spent but project follow-up and final 301 is delinquent because of the ARRCOM-ARRADCOM formation. In the ARRCOM split this project did not make an orderly transition.
- 6 76 7588 ROTARY FORGE INTEGRATED PROD TECHNOLOGY  
A final report has been drafted.
- 6 76 7647 PROCESS FOR MANUFACTURING SWAGING MANDRELS FOR GUN BARRELS  
Various equip designs and models were tested and a system selected for the manufacturing of gun-barrel swaging mandrels.

DARCOM

- A 74 100H UNIAPT EVALUATION - NC/CAM  
This project is complete and demonstrated that the best method for operating an NC tape preparation system is the use of a time share system.

MERADCOM

- 7 75 3508 DRY COMPOSITE MEMBRANE FOR REVERSE OSMOSIS  
This project developed techniques and equipment for the quantity production of wet/dry reversible dry cellulosic-type membrane modules suitable for use in the military multi-purpose water purification equipment.

PROJECTS COMPLETED IN FIRST HALF, CY78 (Cont'd)

- 7 76 3532 MOLTEN SALT LI/CL BATTERY  
Project work was completed during first CY76. Final report was written but never submitted. Final report has now been received and project will be reported as completed.
- 7 75 3552 IMPROVED ALUMINUM ALLOY WELDING FILLER METALS  
Project work was completed during first CY76. Final report was written but never submitted. Final report has now been received and project will be reported as completed.
- 7 76 3580 FUEL CELL STACK PRODUCTION  
Project work was completed during first CY77. Final report was written but never submitted. Final report has now been received and project will be reported as completed.
- E 77 3589 MAN PORT MTL RERADN RADAR ANTENNAS AND FILTERS  
Project was terminated and 140K was reprogrammed to MACI project E 79 3579. Termination was due to the cancellation of the development effort of the portable long range detector of metal objects (Plormods).

CORADCOM

- 2 76 9773 COMPUTER AID F/PREP OF AUTO ANALOG CIRCUIT PROD TEST PROC  
This project is complete. The various computer programs developed have been demonstrated. A follow on contract has been awarded to extend the techniques to additional and more complicated circuits. See project 2 78 9773.

ERADCOM

- 2 70 9217 MMT: FERRITE SOLID STATE RECEIVER PROTECTOR  
Varian at Beverly Mass has produced a long life solid state ferrite diode receiver protector. Ten VFX-9500 limiters were produced and half of them were sent to Hughes for use in the TPQ-36 mortar locating radar. Contract was extended for testing.
- 2 75 9371 AUTOMATING ELECTROD PRODUCTION OF LITHIUM CELLS  
This effort could not be completed with the remaining funds. Since other companies are capable of producing the cells at the desired rate of 5000 cells per month it was decided to cancel this project.

PROJECTS COMPLETED IN FIRST HALF, CY78 (Cont'd)

- 2 75 9441 ARC PLASMA SPRAYED PHASE SHIFT ELEMENTS  
Project completed. The arc plasma spray process was shown to be an effective technique for fabricating dielectric-loaded ferrite phase shifters. However, improved materials and process to assure reproducibility are needed before it can be competitive.
- 2 77 9832 AUTO WIRE WRAP VERIFIER, CAM RELATED  
Project completed. The HDL algorithm has been successfully integrated with automatic wirewrap machine software. The Class I technical report is being prepared.
- 2 75 9836 QC TECH FOR FABR OF 18MM + 25MM ETCHED CORE MICROCHAN PLATES  
Varian associates concentrated on formalizing its quality control procedures for microchannel plates. MCPs are now better, cheaper, and more available. Yield was improved from 16% to 30%. Nitech also uses these procedures to reduce rejection rate.
- H 78 9871 AUTO PRODUCTION OF MILITARY INTEGRATED CIRCUITS  
Project was cancelled because the objective disappeared. \$500K went to 9738 Pulsed Gaas Impatt Diodes and \$250K went to 9767 Auto Assy of Temperature Compensated Voltage Controlled Crystal Oscillators (TCVCXO).

AMMRC

- M 76 6382 HEALTH/SAFETY PROCS PROCEDURES - MFR OF DEPLETED URANIUM COMP  
Camera ready copy in preparation. All work completed. Letterkenny Army Depot will print and issue as DARCOM Handbook.

MIRADCOM-MIRCOM

- R 7T 3126 PROCESSING OF LASER OPTICAL CERAMICS  
AMMRC grew large neodymium doped yttrium-alumina-garnet ingots in an electric resistance furnace. The ingots were cut into 3mm x 30mm rods, polished, and tested in a laser at ECOM. They lased.
- 3 75 3134 PRODUCTION OF FIELD EFFECT ELECTRON EMITTERS  
Procedures were developed for growing composites of uranium and tungsten such that approx. 10 million uniformly spaced tungsten fibers were contained in each square centimeter of surface area. Ten patents were issued covering oper of matl as field emi.

PROJECTS COMPLETED IN FIRST HALF, CY78 (Cont'd)

- R 77 3134 MFG METHODS FOR PRD OF FIELD EFFECT ELECTRON EMITTERS  
The primary objective of this project was to develop procedures for plating closely space control grids on oxide-metal composites. A computer program has been dev. to assist in determining proper pin height and spacing.
- R 77 3138 ACOUSTICAL HOLOGRAPHIC PASSIVE NDT-CERAMIC RADOME  
Project completed. The fab. of the acoustical imaging system scanner control and processing unit was completed. The holoscal 200 system was modified to provide B-scan capabilities. Also, 3-D package was designed and fab.
- R 77 3145 COMPUTER AIDED SPECKLE HOLOGRAPHIC COMP VOID DET SYS (CAM)  
This project is complete. The final report has been published. The resulting system has the capability of analyzing speckle interferograms of flawed cylinders.
- R 77 3188 INFRARED IMAGING SEEKERS FOR THERMAL HOMING MISSILES  
Texas instruments made a study of different materials and production methods for low cost infrared seeker heads. Will include diamond turned and aspheric lenses, and automatic methods for building and aligning the detector, optics, and scanner.
- 3 76 3224 MM&T PROGRAM ON SCREENING OF ELECTRONIC COMPONENTS  
The moisture analysis test (MIL-STD-883 method 1008) has been implemented in MIL-STD-883 method 5004 and 5008 for microcircuits and hybrid microcircuits respectively. Mobile ion detection tests and nitride stability test will be implemented in LSI designs.
- 3 7T 3228 PRODUCTION METHODS FOR EXTRUDABLE HTPB PROPELLANTS  
Accomplishments were not updated from last report period.
- 3 76 3228 PRODUCTION METHODS FOR EXTRUDABLE HTPB PROPELLANT  
Accomplishments were not updated from last report period.
- 3 7T 3229 METHODOLOGY FOR PRODUCING LOW COST, DISPOSABLE MANDRELS  
The effort is being continued under R 78 3229.
- 3 76 3229 METHODOLOGY FOR PRODUCING LOW COST/DISPOSABLE MANDRELS  
The effort is now being conducted under R 78 3229.
- 3 76 3230 MANUFACTURE METHODS FOR HIGH SPEED MACH OF ALUMINUM  
Methods and technology for high-speed machining of aluminum missile structures were successfully developed by this project and are currently scheduled for implementation in the prod of cruise and gsr missile sys at General Dynamics and Vought respectively.



PROJECTS COMPLETED IN FIRST HALF, CY78 (Cont'd)

R 77 3452 LOW COST QUANTITY PRODUCTION TECHNIQUES FOR LASER SEEKERS  
The contractor made a formal Phase I presentation including Phase I MMT process analyses, manufacturing facilities. Assembly and test plans, and a dedicated assembly area design. The Phase I interim report was approved.

TARADCOM-TARCOM

4 75 4391 ISOTHERM HEAT TREAT F/HIGH STRENGTH DUCTILE IRON CAST-PH 2  
All work completed. The durability of the austempered cast ductile iron components are inferior to standard forged components. The cast components are not recommended for low temperature application.

4 76 4395 IMPROVED SEATS FOR MILITARY VEHICLES  
All data was evaluated and the final report was prepared.

4 75 4512 AUTOMATED WELDING OF HULL STRUCTURES - MORE THAN ONE AXIS  
All work is completed. A final report is being completed by TARADCOM. An automatic gas metal arc welding machine using standard componentry was designed and fabricated. An eddy current sensing probe was coupled to a minicomputer to direct the equip.

4 74 4548 PROC ESR STEEL F/IMPROVED HOMOGENEOUS ARMOR-PH 1 + 2  
All work completed. A final report is being prepared. Techniques to produce improved ESR armor have been developed.

TOTAL PROJECTS COMPLETED IN FIRST HALF, CY78:

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MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
SUMMARY PROJECT STATUS REPORT

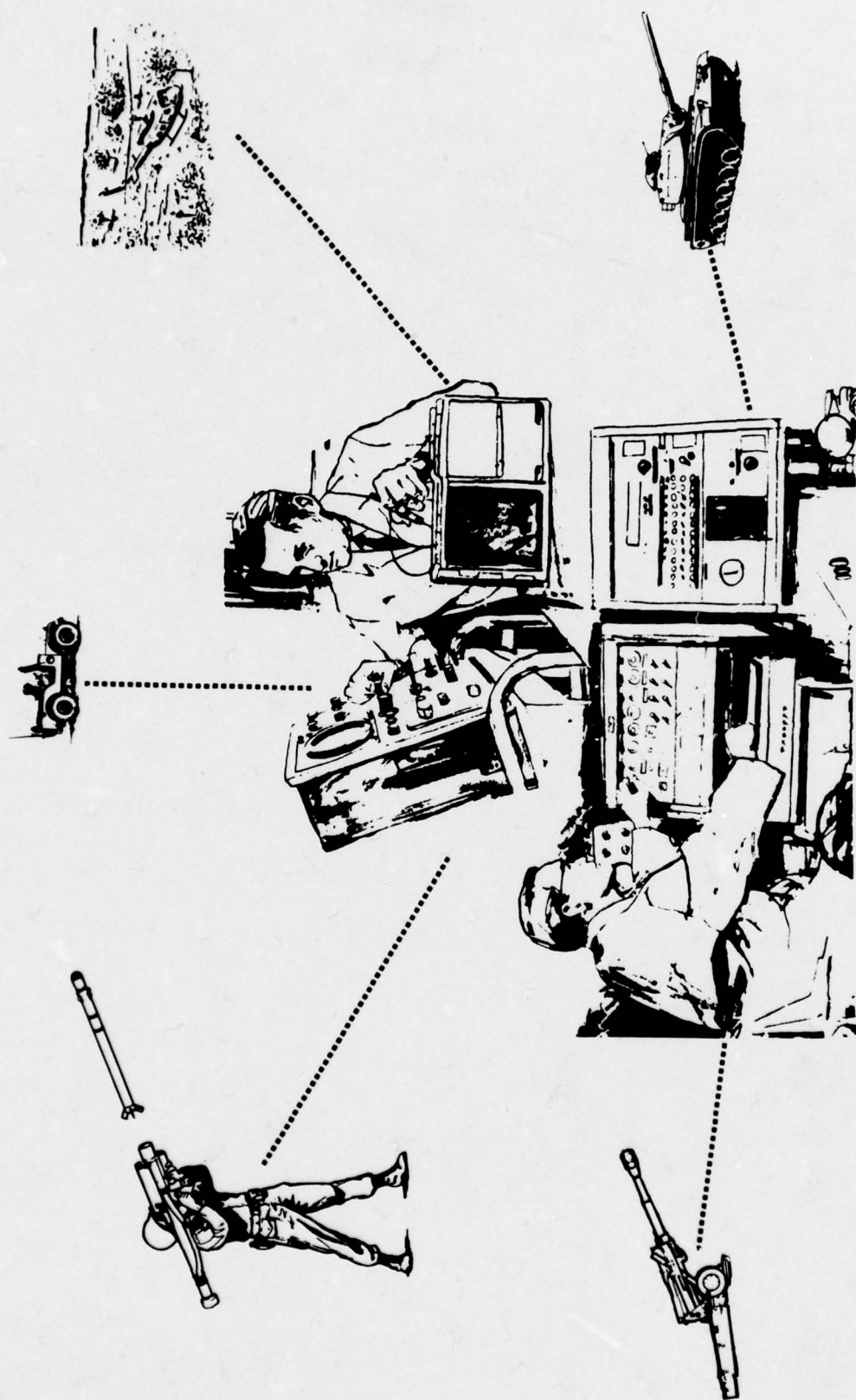
MMT PROGRAM  
SUMMARY PROJECT STATUS REPORT



## MANUFACTURING METHODS AND TECHNOLOGY PROGRAM

### SUMMARY PROJECT STATUS REPORT

The Summary Project Status Report for each SUBMACOM is preceded by the tabulated SUBMACOM MMT project funding status. The accuracy of funding amounts is based on the individual RCS DRCMT-301 reports. Persons interested in the up-to-date financial status of funded projects by SUBMACOM and by fiscal code (see DISCUSSION) should consult RCS CSGLD-1123 (RL) (MIN), Army PBS Program, published monthly by the Information Systems Agency, US Army Research, Development and Acquisition, HQ, DARCOM.



**TEST AND EVALUATION COMMAND  
(TECOM)**

TEST AND EVALUATION COMMAND  
CURRENT FUNDING STATUS, 1ST FY78

| FISCAL<br>YEAR     | NO. OF<br>PROJECTS | AUTHORIZED<br>FUNDS<br>(\$) | *<br>*<br>ALLOCATED<br>(\$) | C O N T R A C T F U N D I N G<br>EXPENDED<br>(\$) | *<br>*<br>I N H O U S E F U N D I N G<br>EXPENDED<br>(\$) | I N H O U S E F U N D I N G<br>EXPENDED<br>(\$) |
|--------------------|--------------------|-----------------------------|-----------------------------|---|---|---|
| 76                 | 1                  | 706,000                     | 87,300                      | 63,800 ( 95%)                                     | 618,700   | 559,200 ( 90%)                                  |
| 77                 | 1                  | 185,000                     | 0                           | 0 ( 0%)   | 185,000   | 150,000 ( 81%)                                  |
| 77                 | 1                  | 863,000                     | 27,000                      | 27,000 (100%)                                     | 836,000   | 535,000 ( 63%)                                  |
| 78                 | 1                  | 735,000                     | 111,000                     | 0 ( 0%)   | 624,000   | 87,000 ( 13%)                                   |
| TOTAL              | 4                  | 2,489,000                   | 225,300                     | 110,800 ( 49%)                                    | 2,263,700   | 1,331,200 ( 58%)                                |
| AUTHORIZED FUNDING |                    | CONTRACT ALLOCATED 9%       |                             | INHOUSE ALLOCATED 90%                             |   |   |

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
SUMMARY PROJECT STATUS REPORT  
1ST SEMIANNUAL SUBMISSION CY 78 HCS DRCMT-301

| PROJ NO.   | TITLE + STATUS  | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|------------|---|--------------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| 0 71 5071  | IMPROVEMENT OF PRODUCTION TEST METHODOLOGY<br>SEE INDIVIDUAL SUBTASKS BELOW FOR STATUS  | 185.0              | 0.0                     | 150.0                               | DEC 77                           | SEP 78                          |
| 0 71 5071A | ACCEPTANCE TEST PROCEDURES<br>NINETEEN ATPS WERE COMPLETED AND PUBLISHED.   | 0.0                | 0.0                     | 0.0                                 |                                  | SEP 78                          |
| 0 71 5071B | FUNDAMENTALS OF RICOCHET<br>SEE PROJECT 0 76 5071 SUBTASK W FOR STATUS  | 0.0                | 0.0                     | 0.0                                 |                                  | SEP 78                          |
| 0 71 5071C | TEST OPERATIONS PROCEDURES<br>TWENTY-FIVE TOPS WERE COMPLETED AND SUBMITTED TO HQ TECOM.  | 0.0                | 0.0                     | 0.0                                 |                                  | SEP 78                          |
| 0 71 5071D | HARD MOUNT USAGE FOR MORTAR AMMO TESTING<br>TASK TERMINATED. THE REQUIREMENT FOR A STANDARD HARD MOUNT FOR TESTING OF MORTAR AMMUNITION WAS BASED ON OBSERVED VARIATION IN PERFORMANCE AT DIFFERENT SITES. IT WAS DETERMINED THAT THESE VARIATIONS WERE NOT RELATED TO THE BASE PLATE.                              | 0.0                | 0.0                     | 0.0                                 |                                  | JUL 78                          |
| 0 71 5071E | IN-TANK FUEL TEMPERATURE IN ARMORED VEHICLES<br>MEASUREMENTS WERE OBTAINED ON THE M60A1 AND M113A1 VEHICLES. IT WAS CONCLUDED THAT TEMPERATURE-TIME PROFILES CAN BE GENERATED DURING ENDURANCE TEST CYCLES. TOP 2-2-607 WILL BE REVISED.  | 0.0                | 0.0                     | 0.0                                 |                                  | SEP 78                          |
| 0 71 5071F | HELMET PENETRATION OF SMALL ARMS<br>THE 1-78 REPORTING PERIOD STATUS FOR THIS SUBTASK WAS NOT PROVIDED.   | 0.0                | 0.0                     | 0.0                                 |                                  | SEP 78                          |
| 0 76 5071  | IMPROVEMENT OF PRODUCTION TEST METHODOLOGY<br>SEE INDIVIDUAL SUBTASKS BELOW FOR STATUS  | 706.0              | 87.3                    | 559.2                               | MAR 77                           | SEP 78                          |
| 0 76 5071A | ACCEPTANCE TEST PROCEDURES<br>TASK COMPLETED. TWENTY-THREE ATPS WERE COMPLETED AND PUBLISHED. A REPORT COVERING THESE ACCOMPLISHMENTS HAS BEEN PREPARED.  | 0.0                | 0.0                     | 0.0                                 |                                  | JUL 78                          |
| 0 76 5071B | REFINEMENT OF TITANIUM ARMOR SPECS<br>TASK COMPLETED. FINAL REPORT (APGOMT-4618) WAS DISTRIBUTED NOV 1976. AMENDMENT OF SPECIFICATION MIL-T-460778 WAS INITIATED.   | 0.0                | 0.0                     | 0.0                                 |                                  | JUL 78                          |
| 0 76 5071C | AUTOMATIC DATA COLLECTION SYSTEMS FOR AIR CONDITIONER<br>THE AIR CONDITIONERS AIR-FLOW PARAMETER AND COOLING CAPACITY COMPUTER SOFTWARE PROGRAM HAVE BEEN COMPLETED. THE REMAINING EFFORT WHICH IS TO BE COMPLETED IN SEPT. 78 CONSIST OF INSTRUMENTATION INSTALLATION AND MODIFYING THE EXISTING COOLING CAP. PROG | 0.0                | 0.0                     | 0.0                                 |                                  | SEP 78                          |



SUMMARY PROJECT STATUS REPORT  
MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
1ST SEMIANNUAL SUBMISSION CY 78 RCS DRGMT-301

| PROJ NO.   | TITLE + STATUS   | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|------------|--|--------------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| 0 76 5071D | IMPROVED TRANSPORTABILITY TEST CAPABILITIES<br>THE TRANSPORTABILITY TEST OPERATIONS PROCEDURE 1-2-500 WAS CHANGED TO INCLUDE THE USE OF THE COMPUTER SOFTWARE TO TEST DEVELOPMENTAL AND PRODUCTION AUTOMOTIVE ITEMS.   | 0.0                | 0.0                     | 0.0                                 |                                  | SEP 78                          |
| 0 76 5071E | EVALUATION OF IMPROVED BORESCOPE TECHNIQUES<br>TASK COMPLETED. THE NEW TECHNIQUES REDUCED THE PRODUCTION INSPECTION TIME APPROXIMATELY 30%.  | 0.0                | 0.0                     | 0.0                                 |                                  | JUL 78                          |
| 0 76 5071F | IMPROVED FUEL HANDLING TEST CAPABILITY<br>TASK COMPLETED. NEW FACILITIES WERE RECOMMENDED TO INCLUDE A NET POSITIVE SUCTION HEAD FACILITY, A FILTER/SEPARATOR TEST STATION, A PUMP PRIMING AND TEST STATION, AND A MARINE TERMINAL PIER TO PERMIT CANTING AND DECANTING OF THE TANK FARM SYSTEM. | 0.0                | 0.0                     | 0.0                                 |                                  | JUL 78                          |
| 0 76 5071H | DEV OF IMPROVED METHODOLOGY FOR SAFETY EVAL OF GEN EQUIP<br>TASK COMPLETED. A FINAL REPORT OF IMPROVED METHODS FOR SAFETY EVALUATION OF GENERAL EQUIPMENT WAS COMPLETED (MT-5116, JUNE 78). PUMP PRIMING AND TEST STATION, AND A MARINE TERMINAL PIER TO PERM                                    | 0.0                | 0.0                     | 0.0                                 |                                  | JUL 78                          |
| 0 76 5071J | EVAL OF CO2 CONTAMINATION FROM TANK MACHINE GUNS<br>THE DESIGN HAS BEEN COMPLETED FOR ALL ITEMS WITH THE EXCEPTION OF AN AIR BLOWER. THE MATERIALS FOR THIS PROJECT ARE AVAILABLE WITH EXCEPTION OF THE AIR BLOWER.  | 0.0                | 0.0                     | 0.0                                 |                                  | SEP 78                          |
| 0 76 5071J | TEST OPERATIONS PROCEDURES<br>FORTY-TWO DRAFT TOPS WERE COMPLETED AND SUBMITTED TO HQ TECOM, 23 FINAL REPORTS WERE PRINTED AND DISTRIBUTED.  | 0.0                | 0.0                     | 0.0                                 |                                  | SEP 78                          |
| 0 76 5071K | JOINT BALLISTIC TEST CONFERENCE SUPPORT<br>TASK COMPLETED.   | 0.0                | 0.0                     | 0.0                                 |                                  | JUL 78                          |
| 0 76 5071L | IMPROVEMENT OF INERT LOADING CAPABILITIES<br>THE PELRON (POLYURETHANE) PROCESS IS AN IMPROVED METHOD WITH UNLIMITED APPLICATION. OTHER MATERIALS (SAND, STEEL, CYP8UM, MAX) APPLICATION LIMITATION HAVE BEEN IDENTIFIED. PELRON IS BEING CONSIDERED FOR ADDING TO MIL-J-60350.                   | 0.0                | 0.0                     | 0.0                                 |                                  | SEP 78                          |
| 0 76 5071M | ARTILLERY PROJECTILE SPOILER PLATE DESIGN + PERFORMANCE<br>TASK COMPLETED. STABLE DESIGNS WERE DEVELOPED FOR THE 155MM, 175MM, AND 8 INCH PROJECTILES ACHIEVING RANGE REDUCTIONS ON THE ORDER OF 4000 TO 5000 METERS DURING TEST FIRINGS.  | 0.0                | 0.0                     | 0.0                                 |                                  | JUL 78                          |
| 0 76 5071N | DROP TEST PROCEDURES FOR AMMUNITION<br>TASK COMPLETED. THE FINAL REPORT (AFG-RT-4864) RECOMMENDED NEW SAMPLE SIZES AND TEST SEQUENCES, AND USE OF METALLIZED COATING ON 12-INCH CONCRETE PAD IN LIEU OF 3-INCH STEEL. FURTHER STUDY IS REQUIRED.   | 0.0                | 0.0                     | 0.0                                 |                                  | JUL 78                          |

S U M M A R Y P R O J E C T S T A T U S R E P O R T  
1ST SEMIANNUAL SUBMISSION CY 78 RCS DRGNT-301

| PROJ NO.    | TITLE + STATUS   | AUTHOR-<br>RIZED<br>(\$000) | CONTRACT<br>VALUES<br>(\$000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(\$000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-------------|--|-----------------------------|-------------------------------|---|---|--|
|             |  |                             |                               |   |   |  |
| 0 76 5071U  | MAINTAINING TEMPERATURE DURING TESTS OF AMMUNITION<br>TASK COMPLETED. IT WAS CONCLUDED THAT THE USE OF THE STANDARD<br>FIBER BOARD OVER PACK PROVIDES ADEQUATE THERMAL INSULATION FOR<br>AMMUNITION DURING TEST OPERATIONS WHEN IT IS<br>TEMPERATURED-CONDITIONED IN AND TRANSPORTED IN AN INSULATED<br>CONTAINER. | 0.0                         | 0.0                           | 0.0   |   | JUL 78                                   |
| 0 76 5071P  | UNIFORM STUDS FOR LASER DESIGNATOR DEVELOPMENT<br>TASK COMPLETED. AN INTERIM GUIDANCE DOCUMENT HAS BEEN PREPARED<br>THAT INCORPORATES THE TOP PROCEDURES.  | 0.0                         | 0.0                           | 0.0   |   | JUL 78                                   |
| 0 76 5071Q  | FUNDAMENTALS OF RICOCHET<br>RICOCHET TESTS WERE COMPLETED. PHASE II FIRING TESTS HAVE BEEN<br>DELAYED AS THE RANGE AND TECHNICAL SUPPORT PERSONNEL WERE NOT<br>AVAILABLE. COMPUTER SOFTWARE HAS BEEN DEVELOPED TO FACILITATE<br>DATE REDUCTION.  | 0.0                         | 0.0                           | 0.0   |   | SEP 78                                   |
| 0 76 5071N  | HELMET PENETRATION OF SMALL ARMS<br>TASK COMPLETED. A FINAL REPORT WAS PUBLISHED AND A NEW PROCEDURE<br>WAS PREPARED FOR INCORPORATION INTO TOP 4-2-016 ON SMALL ARMS<br>AMMUNITION.   | 0.0                         | 0.0                           | 0.0   |   | JUL 78                                   |
| 0 76 5071S  | APPLICATION OF DATA BASE TECHNOLOGY TO WORKLOAD SCHEDULING<br>A PILOT PROGRAM HAS BEEN DEVELOPED WHICH PERMITS A DIRECT<br>ASSESSMENT OF COST CENTER WORKLOAD FOR THE ARTILLERY AND ARMOR<br>PROJECTS. COMPUTER SOFTWARE HAS BEEN DEVELOPED FOR THE MATERIEL<br>TESTING DIRECTORATE.                               | 0.0                         | 0.0                           | 0.0   |   | SEP 78                                   |
| 0 76 5071T  | VALIDATION OF ACCEPTANCE TEST PROCEDURES<br>TASK COMPLETED. A FINAL REPORT WAS PREPARED AND APPROVED FOR<br>PUBLICATION, MT-5071, JAN, 78.   | 0.0                         | 0.0                           | 0.0   |   | JUL 78                                   |
| 0 77 5071   | IMPROVEMENT OF PRODUCTION TEST METHODOLOGY<br>SEE INDIVIDUAL SUBTASKS LISTED BELOW   | 663.0                       | 27.0                          | 535.0   | DEC 78                                    | SEP 79                                   |
| 0 77 5071A  | ACCEPTANCE TEST PROCEDURES<br>ELEVEN NEW ATPS WERE COMPLETED AND PUBLISHED. FIFTEEN WERE<br>REVISED WITH TWO OTHER STILL IN THE PROCESS OF BEING UPDATED. THE<br>ATP INDEX HAS BEEN REVISED AND UP DATED. TASK COMPLETED.  | 0.0                         | 0.0                           | 0.0   |   | JUL 78                                   |
| 0 77 5071AA | IMPROVED MOBILITY MODEL TEST SUPPORT<br>A PROTOTYPE VEHICLE HIDE EVALUATOR HAS BEEN PROCURED AND TESTED.<br>THE TERRAIN AND SURFACE CHARACTERISTICS OF CURRENT VEHICLE TEST<br>COURSES HAVE BEEN RECORDED FOR COMPARISON WITH THE REQUIREMENTS<br>OF A COMPUTERIZED MODEL OF VEHICLE MOBILITY.                     | 0.0                         | 0.0                           | 0.0   |   | SEP 79                                   |

S U M M A R Y P R O J E C T S T A T U S R E P O R T  
1ST SEMIANNUAL SUBMISSION CY 78 HCS DRCHT=301

| PROJ NO.   | TITLE + STATUS   | AUTHOR-<br>RIZED<br>(8000) | CONTRACT<br>VALUES<br>(8000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(8000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|------------|--|----------------------------|------------------------------|--|---|--|
| 0 77 5071A | IMPACT SENSITIVITY OF FUZES<br>A COMPREHENSIVE SEARCH IS UNDERWAY TO ESTABLISH THE PHYSICAL<br>PARAMETERS WHICH DESCRIBE THE EFFECTS OF RAIN AND GRUSH ON FUZES<br>AND THE FACTORS THAT MUST BE REPRODUCED TO OBTAIN A VALID TEST OF<br>PRODUCTION FUZES.  | 0.0                        | 0.0                          | 0.0  |   | SEP 79                                   |
| 0 77 5071B | REFINEMENT OF TITANIUM ARMOR SPEC MIL-T-46077<br>TASK COMPLETED. THE TECHNICAL REPORT (ARGMT=5003) ON FIRING<br>TESTS OF 14.5MM APL, 8-32 PROJECTILES AGAINST ARMOR PLATE OF<br>11/2 INCH, 13/4 INCH, AND 2 INCH WAS APPROVED BY TECOM HQ, AND<br>DISTRIBUTED IN SEPT, 1977.                               | 0.0                        | 0.0                          | 0.0  |   | JUL 78                                   |
| 0 77 5071C | BACKSPALLING CHARACTERISTICS<br>TASK WAS DELAYED AWAITING THE ARRIVAL OF DUAL HARDNESS STEEL<br>(MIL-S-46099A). THE RATIO OF FACE-PLATE TO BACK-PLATE THICKNESS<br>ON THE PLATES WILL BE 45/55 RATHER THAN 50/50 AS WAS TESTED<br>PREVIOUSLY.  | 0.0                        | 0.0                          | 0.0  |   | SEP 79                                   |
| 0 77 5071D | REQUIREMENT + FEASIBILITY FOR A RICOCHET RANGE<br>TASK COMPLETED. A REPORT WAS PUBLISHED IN AUG, 1977 WHICH<br>RECOMMENDED A RICOCHET FIRING RANGE FOR TESTING HIGH-VELOCITY<br>KINETIC-ENERGY TANK AMMUNITION. FUNDS HAVE BEEN REQUESTED FOR<br>THIS RANGE.   | 0.0                        | 0.0                          | 0.0  |   | JUL 78                                   |
| 0 77 5071E | DEFINITION AND EVALUATION OF UNSATISFACTORY IGNITION<br>TASK COMPLETED. THE FINAL REPORT (ARGMT=5130, JUNE 78) CONCLUDED<br>THAT NO UNIVERSAL QUANTITATIVE CRITERIA FOR EVALUATION OF<br>PROPELLING CHARGE SAFETY WAS AVAILABLE.   | 0.0                        | 0.0                          | 0.0  |   | JUL 78                                   |
| 0 77 5071F | METHODS OF MALOGEN LEAK DETECTION<br>A LITERATURE SEARCH HAS BEEN CONDUCTED TO IDENTIFY POTENTIAL LEAK<br>DETECTION METHODS INCLUDING COMMERCIALLY AVAILABLE EQUIPMENT AND<br>TECHNIQUES. A LEAK DETECTION ACCUMULATION CHAMBER HAS BEEN<br>CONSTRUCTED.   | 0.0                        | 0.0                          | 0.0  |   | SEP 79                                   |
| 0 77 5071G | SMALL CALIBER WEAPON COOK-OFF TESTING<br>A REVIEW OF RECENT COOK-OFF STUDIES HAS COMPLETED. THE SCHEDULED<br>FIRING OF THE M1602 MACHINE GUN AND M1601 RIFLE WAS DELAYED DUE TO<br>THE NON-AVAILABILITY OF GUNCREWS AND TEST SUPPORT PERSONNEL. THE<br>FIRINGS HAVE BEEN RESCHEDULED FOR THE 4TH QTR FY79. | 0.0                        | 0.0                          | 0.0  |   | JUL 79                                   |
| 0 77 5071H | SMALL ARMS RICOCHET INVESTIGATION<br>RICOCHET DATA FOR THE 7902MM PROJECTILES WERE REVISED BALLISTIC<br>COEFFICIENTS AND DRAG FUNCTIONS. THIS RESULTED IN CHANGES TO THE<br>DATA PUBLISHED IN REPORT AT-4013. THE REVISED REPORT HAS BEEN<br>DISTRIBUTED TO THE RECIPIENTS OF THE INITIAL REPORT.          | 0.0                        | 0.0                          | 0.0  |   | JUL 78                                   |

SUMMARY PROJECT STATUS REPORT  
1ST SEMI-ANNUAL SUBMISSION CY 76 RCB DRCHT-301

| PROJ NO.   | TITLE + STATUS  | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|------------|---|--------------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| 0 77 50711 | RISK IN ACCEPTING MATERIAL NOT CONFORMING TO EMI RPT<br>THE EMI RISK ASSESSMENT TECHNIQUE HAS BEEN DOCUMENTED. IT HAS BEEN DETERMINED THAT THIS TECHNIQUE WILL SATISFY APG'S REQUIREMENTS. THE NECESSARY ACTIONS TO USE THIS EMI TECHNIQUE AT APG IS UNDERWAY.                                    | 0.0                | 0.0                     | 0.0                                 | SEP 79                           | SEP 79                          |
| 0 77 5071J | TEST OPERATIONS PROCEDURES<br>SEVENTEEN DRAFT TOPS WERE COMPLETED AND SUBMITTED TO HQ TECON. SEVEN DRAFTS HAVE BEEN REVISED TO ACCOMMODATE COMMENTS PRIOR TO PUBLICATION. TWENTY-FOUR PROCEDURES WERE PUBLISHED.  | 0.0                | 0.0                     | 0.0                                 | SEP 79                           | SEP 79                          |
| 0 77 5071K | COOLING CAPACITY OF AIR CONDITIONERS<br>WORK ON STANDARDIZING THE APG PSYCHROMETRIC CELL IS CONTINUING. IN AN ATTEMPT TO RESOLVE UNEXPLAINED VARIATIONS IN THE DISCHARGE COEFFICIENTS OF THE NOZZLES, THE LAMINAR FLOW ELEMENTS WERE SHIPPED TO THE NBS FOR CALIB.                                | 0.0                | 0.0                     | 0.0                                 | SEP 79                           | SEP 79                          |
| 0 77 5071N | SMOKE-OBSCURANTS<br>THE TEST PLAN, DATA REDUCTION COMPUTER SOFTWARE, EQUIPMENT CALIBRATION, SOPs, HAVE BEEN COMPLETED. THIS TASK IS SCHEDULED TO BE COMPLETED 4TH QTR 76.   | 0.0                | 0.0                     | 0.0                                 | DEC 78                           | SEP 79                          |
| 0 77 5071Q | SALT FOG TEST PROCEDURES<br>THE LITERATURE SEARCH ON THE FAILURE OF MILITARY EQUIPMENT IN NATURAL SALT ENVIRONMENTS AND IN SALT-FOG TEST CHAMBERS IS CONTINUING. ALSO, A LITERATURE SEARCH IS UNDERWAY TO CORRELATE LABORATORY TESTS AND REAL-WORLD CONDITIONS.                                   | 0.0                | 0.0                     | 0.0                                 | DEC 78                           | SEP 79                          |
| 0 77 5071R | GUN AIR DEFENSE SYSTEM TEST AND EVALUATION<br>A CRITICAL REVIEW OF RECENT TESTS OF AIR DEFENSE SYSTEMS HAS BEEN COMPLETED. DOCUMENTATION OF REVISED PROCEDURES AND OPTIMUM ANALYTICAL METHODS ARE BEING COORDINATED WITH PLANNING FOR EVALUATION OF THE NEW DIVISION AIR DEFENSE SYSTEM (DIVADS). | 0.0                | 0.0                     | 0.0                                 | DEC 78                           | SEP 79                          |
| 0 77 5071S | EVALUATION OF SPOTTING CHARGES FOR POINT DETONATING FUZES<br>TASK COMPLETED. THE JULY 1977 REPORT RECOMMENDED THAT SPOTTING OR SUPPLEMENTAL CHARGES NOT BE USED IN INERT PROJECTILES FOR THE ASSESSMENT OF POINT DETONATING MODE OF FUZE FUNCTION AGAINST HARD TARGETS.                           | 0.0                | 0.0                     | 0.0                                 | DEC 78                           | JUL 78                          |
| 0 77 5071T | LOGISTICS DATA STORAGE AND RETRIEVAL (LIGSTAR) SYSTEM<br>TASK TERMINATED. THIS TERMINATION WAS DUE TO DARCOM'S DECISION TO USE THE TAIDS SYSTEM FOR THE UPCOMING 8MI AND PVS POT-G TESTS.   | 0.0                | 0.0                     | 0.0                                 | DEC 78                           | JUL 78                          |
| 0 77 5071U | IFF SYSTEM<br>THE CONSULTING FIRM SUBMITTED THE DRAFT REPORT FOR REVIEW.  | 0.0                | 0.0                     | 0.0                                 | DEC 78                           | SEP 79                          |



MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
SUMMARY PROJECT STATUS REPORT  
1ST SEMIANNUAL SUBMISSION CY 78 MCS DRCHT-301

| PROJ NO.   | TITLE + STATUS  | AUTHORIZED<br>(\$000) | CONTRACT<br>VALUES<br>(\$000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(\$000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|------------|---|-----------------------|-------------------------------|---|---|--|
| 0 77 5071V | PRODUCTION TEST RANGE<br>THE DATA COLLECTION EFFORT FOR THE FLOW AND ACTIVITY ANALYSIS HAS BEEN COMPLETED. MODELING TECHNIQUES ARE BEING DEVELOPED.   | 0.0                   | 0.0                           | 0.0   | DEC 78                                    | SEP 79                                   |
| 0 77 5071M | EVALUATION OF AMMUNITION CONDITIONING ENVIRONMENTAL CHAMBERS APPROXIMATELY 40% OF THE REQUIRED MEASUREMENTS OF EXISTING TEMPERATURE GRADIENTS AND DISTRIBUTION HAVE BEEN COMPLETED. WORK ON THIS TASK HAS BEEN DELAYED DUE TO LACK OF TECHNICAL PERSONNEL.                                    | 0.0                   | 0.0                           | 0.0   | DEC 78                                    | SEP 79                                   |
| 0 77 5071Y | APPLICATION OF SIMULATION TECHNOLOGY<br>SOURCES OF TECHNICALLY COMPETENT CONSULTANTS HAVE BEEN IDENTIFIED. ALSO, CANDIDATE APPLICATION AREAS HAVE BEEN IDENTIFIED. THE PRESENT EFFORT IS TO VALIDATE THE FEASIBILITY OF APPLYING SIMULATION TECHNOLOGY TO THE TESTING OF PLRS.                | 0.0                   | 0.0                           | 0.0   | DEC 78                                    | SEP 79                                   |
| 0 78 5071  | IMPROVEMENT OF PRODUCTION TEST METHODOLOGY<br>FOR STATUS SEE THE INDIVIDUAL SUBTASKS LISTED BELOW   | 735.0                 | 111.0                         | 87.0  | DEC 79                                    | DEC 79                                   |
| 0 78 5071A | ACCEPTANCE TEST PROCEDURES<br>EIGHT (8) ATPS RELATING TO ARTILLERY AND ARMOR MATERIEL WERE BEING PREPARED AND COORDINATED WITH INTERESTED AGENCIES.   | 0.0                   | 0.0                           | 0.0   |   | DEC 79                                   |
| 0 78 5071B | GEDAAC AND CONVENTIONAL INSTRUMENTATION DATA CORRELATION<br>THE WORK WAS DELAYED TO PERMIT THE SCOPE TO BE EXPANDED TO INCLUDE THE EVALUATION OF EXISTING SOFTWARE. THIS EXPANSION RESULTED FROM THE DISCOVERY OF SUSPECTED SOFTWARE INADEQUACIES DURING GENERATOR TESTING.                   | 0.0                   | 0.0                           | 0.0   |   | DEC 79                                   |
| 0 78 5071C | ELECTROSTATIC GENERATION AND DISSIPATION<br>THE ELECTROSTATIC POTENTIAL AND MEASUREMENT LITERATURE SEARCH INDICATED THAT THE "FARADAY CAGE" SYSTEM OF MEASUREMENT IS A PROMISING APPROACH. THE NEXT PHASE WILL BE TO CONSTRUCT AN EXPERIMENTAL FARADAY CAGE.                                  | 0.0                   | 0.0                           | 0.0   |   | DEC 79                                   |
| 0 78 5071D | SOLID STATE SHEAR CAMERA<br>THE PRELIMINARY DESIGN OF A SOLID STATE SHEAR CAMERA HAS BEEN COMPLETED. A STATE-OF-THE-ART SOLID STATE IMAGE ARRAYS INVESTIGATION IS UNDERWAY. PRELIMINARY FINDINGS INDICATE THAT THE STATE-OF-THE-ART SPEEDS DO NOT APPROACH THE SHEAR CAMERA REQ.              | 0.0                   | 0.0                           | 0.0   |   | DEC 79                                   |
| 0 78 5071E | GUN AIR DEFENSE SYSTEM LASER TECHNIQUES<br>A PRELIMINARY STUDY INDICATED THAT SIGNIFICANT TESTING IMPROVEMENTS COULD BE REALIZED BY THE USE OF NEW TARGET TRACKING SYSTEMS. THE STUDY RESULTS ARE BEING COORDINATED WITH THE ALL-WEATHER FINE CONTROL SYS EVALUATION INSTRUMENTATION PROJECT. | 0.0                   | 0.0                           | 0.0   |   | DEC 79                                   |

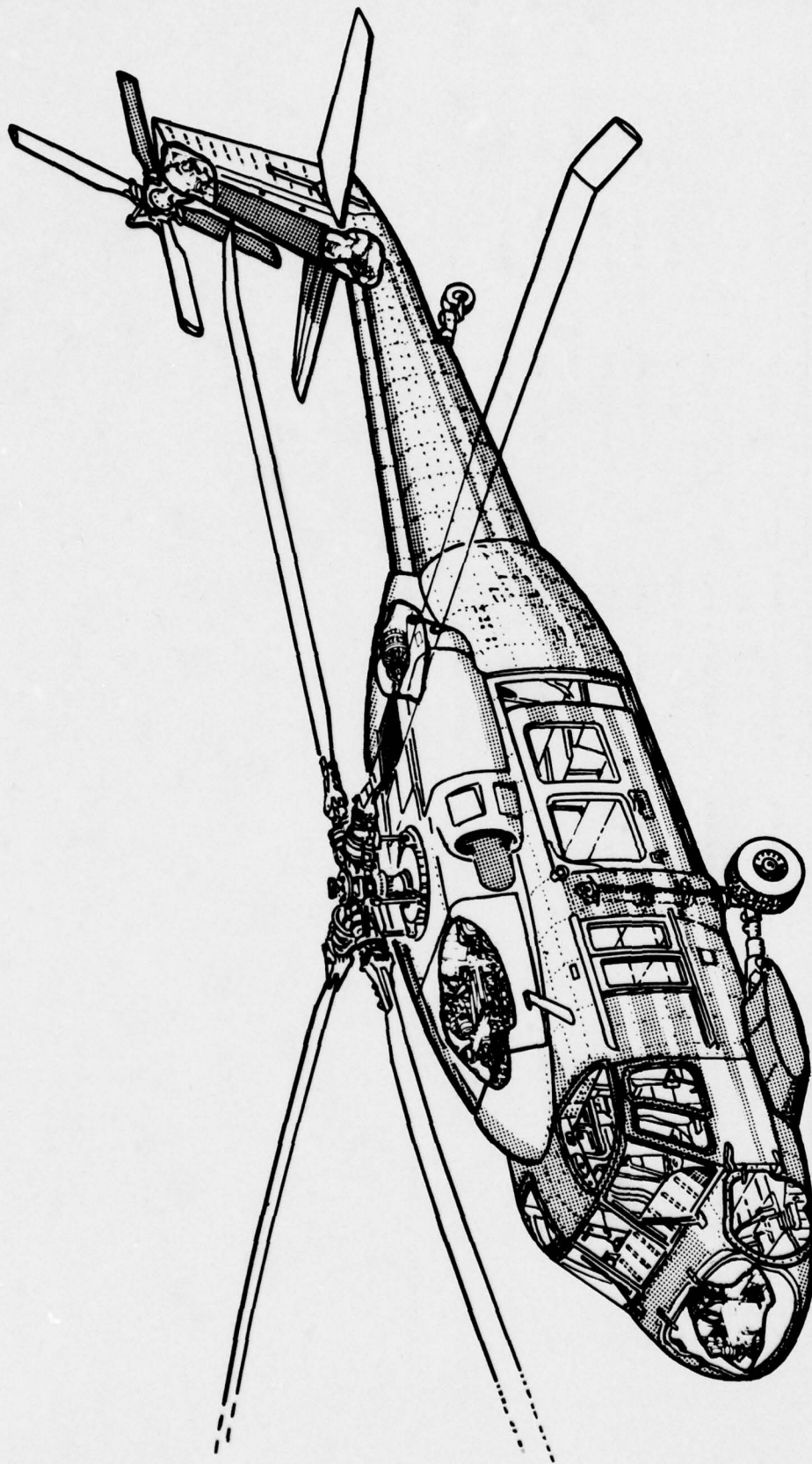


MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
S U M M A R Y P R O J E C T S T A T U S R E P O R T  
1ST SEMI-ANNUAL SUBMISSION CY 78 RCB DRGCMT-301

| PROJ NO.   | TITLE + STATUS   | AUTHO-<br>RIZED<br>(\$000) | CONTRACT<br>VALUES<br>(\$000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(\$000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESNT<br>PROJECTED<br>COMPLETE<br>DATE |
|------------|--|----------------------------|-------------------------------|---|---|---|
| 0 78 5071F | PROJECTILE BODY CURRENT INSPECTION<br>A PHASE AMPLITUDE BODY CURRENT INSPECTION UNIT HAS BEEN PLACED ON<br>ORDER. CRACKED M106 PROJECTILES HAVE BEEN OBTAINED FOR THE<br>PROPOSED INSPECTION PROCEDURE EXPERIMENTAL TRIALS.  | 0.0                        | 0.0                           | 0.0   |   | DEC 79                                  |
| 0 78 5071G | IN-BORE RADIOGRAPHY TECHNIQUE APPLICATION<br>THE X-RAY TRIGGER FEASIBILITY HAS BEEN DEMONSTRATED. THE MAJOR<br>X-RAY TRIGGER COMPONENTS HAVE EITHER BEEN ACQUIRED OR ARE ON<br>ORDER. SECTIONS OF A 105MM GUN TUBE AND TWO INERT ROUNDS HAVE<br>BEEN ACQUIRED.   | 0.0                        | 0.0                           | 0.0   |   | DEC 79                                  |
| 0 78 5071H | MILITARY VEHICLE ROLL OVER TESTS<br>A SCOPE OF WORK IS BEING PREPARED FOR SOLICITING MILITARY<br>VEHICLES FIELD STABILITY POTENTIAL TEST METHODS. CONTRACTORS WILL<br>BE REQUIRED TO INVESTIGATE PRIVATE INDUSTRY AND OTHER GOV.<br>AGENCIES METHODS.  | 0.0                        | 0.0                           | 0.0   |   | DEC 79                                  |
| 0 78 5071I | MULTI FUEL SPACE HEATERS CAPACITY TESTING<br>THE WORK COMPLETED TO DATE CONSISTED OF A LITERATURE WHICH<br>INCLUDED MIL-STDs, TECHNICAL PERIODICALS, INDUSTRY STANDARDS AND<br>CODES, APPLICABLE ARTICLES, ETC. ALSO, EXISTING CAPACITY TESTING<br>PROCEDURES PERTAINING TO AIR CONDITIONS ARE BEING REVIEWED. | 0.0                        | 0.0                           | 0.0   |   | DEC 79                                  |
| 0 78 5071J | TRANSDUCER VELOCITY MEASUREMENT<br>INITIAL ACOUSTIC TRANSDUCERS EXPERIMENTAL DATA STUDY INDICATED<br>THAT LARGE ERRORS EXISTED DUE TO NONSTANDARD PROJECTILE<br>TRAJECTORIES AND UNKNOWN SHOCK WAVE VELOCITY. TO CORRECT THESE<br>PROBLEMS, ADDITIONAL TRANSDUCERS WERE INCLUDED IN THE MATH.<br>MODEL.        | 0.0                        | 0.0                           | 0.0   |   | DEC 79                                  |
| 0 78 5071K | DIRECT FIRE WEAPON ADVANCED MUZZLE BORE SIGHT<br>AN ADVANCED BORE SIGHT WAS CONSTRUCTED WITH IMPROVED OPTICAL AND<br>MECHANICAL ADJUSTMENTS. A PROCEDURE IS BEING WRITTEN TO COMPARE<br>THE ACCURACY OF THE NEW INSTRUMENTATION WITH THE PRESENT AND<br>FUTURE BORE SIGHTS.                                    | 0.0                        | 0.0                           | 0.0   |   | DEC 79                                  |
| 0 78 5071L | MICROWAVE SKY SCREEN<br>A LITERATURE SEARCH HAS BEEN INITIATED TO ASCERTAIN THE<br>AVAILABILITY OF MICROWAVE HARDWARE SUITABLE FOR APPLICATION IN<br>THE MICROWAVE SKY SCREEN.   | 0.0                        | 0.0                           | 0.0   |   | DEC 79                                  |
| 0 78 5071M | IMPROVED CRUSHER GAGES<br>THE BALLISTIC RESEARCH LABORATORIES HAVE BEEN REQUESTED TO PERFORM<br>AN ANALYSIS OF US AND FOREIGN GAGES TO EVALUATE EXISTING GAGES<br>USING FINITE ELEMENT TECHNIQUES.   | 0.0                        | 0.0                           | 0.0   |   | DEC 79                                  |

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
SUMMARY PROJECT STATUS REPORT  
1ST SEMI-ANNUAL SUBMISSION CY 78 HCS DRCHT-301

| PROJ NO.   | TITLE + STATUS   | AUTHORIZED | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|------------|--|------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| 0 78 5071N | TEST AUTOMATION DEVELOPMENT<br>A PLAN OF ACTION WAS PREPARED WHICH INCLUDED THE REQUIREMENTS FOR AUTOMATING THE ANTENNA TEST RANGE, PLANS FOR A DATA ACQUISITION SYSTEM FOR TRI-TAC HAVE BEEN COMPLETED. | 0.0        | 0.0                     | 0.0                                 |                                  | DEC 79                          |
| 0 78 5071O | REAL TIME INTERNAL TUBE PRESSURE<br>NBS CONSULTING SERVICES HAVE BE ACQUIRED DUE TO THE COMPLEXITY OF THE PARAMETERS AND RESTRAINTS INVOLVED.  | 0.0        | 0.0                     | 0.0                                 |                                  | DEC 79                          |
| 0 78 5071P | TEST OPERATIONS PROCEDURES<br>EIGHTEEN TOPS WERE SUBMITTED FOR APPROVAL AND PUBLICATION.   | 0.0        | 0.0                     | 0.0                                 |                                  | DEC 79                          |



**AVIATION R&D COMMAND  
(AVRADCOM)**

| FISCAL<br>YEAR | NO. OF<br>PROJECTS | AUTHORIZED<br>FUNDS<br>( \$ ) | *<br>*<br>CONTRACT FUNDING<br>EXPENDED<br>( \$ ) | *<br>*<br>INDUSTRY FUNDING<br>EXPENDED<br>( \$ ) |
|----------------|--------------------|-------------------------------|--|--|
| 1960           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1961           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1962           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1963           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1964           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1965           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1966           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1967           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1968           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1969           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1970           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1971           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1972           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1973           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1974           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1975           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1976           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1977           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1978           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1979           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1980           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1981           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1982           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1983           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1984           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1985           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1986           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1987           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1988           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1989           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1990           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1991           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1992           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1993           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1994           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1995           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1996           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1997           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1998           | 1                  | 100,000                       | 100,000  | 100,000  |
| 1999           | 1                  | 100,000                       | 100,000  | 100,000  |
| 2000           | 1                  | 100,000                       | 100,000  | 100,000  |
| 2001           | 1                  | 100,000                       | 100,000  | 100,000  |
| 2002           | 1                  | 100,000                       | 100,000  | 100,000  |
| 2003           | 1                  | 100,000                       | 100,000  | 100,000  |
| 2004           | 1                  | 100,000                       | 100,000  | 100,000  |
| 2005           | 1                  | 100,000                       | 100,000  | 100,000  |
| 2006           | 1                  | 100,000                       | 100,000  | 100,000  |
| 2007           | 1                  | 100,000                       | 100,000  | 100,000  |
| 2008           | 1                  | 100,000                       | 100,000  | 100,000  |
| 2009           | 1                  | 100,000                       | 100,000  | 100,000  |
| 2010           | 1                  | 100,000                       | 100,000  | 100,000  |
| 2011           | 1                  | 100,000                       | 100,000  | 100,000  |
| 2012           | 1                  | 100,000                       | 100,000  | 100,000  |
| 2013           | 1                  | 100,000                       | 100,000  | 100,000  |
| 2014           | 1                  | 100,000                       | 100,000  | 100,000  |
| 2015           | 1                  | 100,000                       | 100,000  | 100,000  |
| 2016           | 1                  | 100,000                       | 100,000  | 100,000  |
| 2017           | 1                  | 100,000                       | 100,000  | 100,000  |
| 2018           | 1                  | 100,000                       | 100,000  | 100,000  |
| 2019           | 1                  | 100,000                       | 100,000  | 100,000  |
| 2020           | 1                  | 100,000                       | 100,000  | 100,000  |
| 2021           | 1                  | 100,000                       | 100,000  | 100,000  |
| 2022           | 1                  | 100,000                       | 100,000  | 100,000  |
| 20             |                    |                               |  |  |

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|-------|----|------------|------------|-----------|--------|-----------|-----------|--------|
| 71    | 1  | 2,276,000  | 2,206,200  | 2,200,800 | ( 99%) | 69,800    | 69,000    | ( 98%) |
| 72    | 0  | 0          | 0          | 0         | ( 0%)  | 0         | 0         | ( 0%)  |
| 73    | 1  | 357,900    | 356,200    | 325,300   | ( 91%) | 3,700     | 0         | ( 0%)  |
| 74    | 5  | 2,111,000  | 1,225,000  | 1,115,100 | ( 91%) | 806,000   | 562,200   | ( 63%) |
| 75    | 9  | 1,771,500  | 1,177,600  | 762,600   | ( 64%) | 593,900   | 516,200   | ( 86%) |
| 76    | 11 | 2,895,100  | 2,344,200  | 1,342,600 | ( 57%) | 550,900   | 507,000   | ( 92%) |
| 77    | 0  | 0          | 0          | 0         | ( 0%)  | 0         | 0         | ( 0%)  |
| 77    | 13 | 7,028,600  | 5,312,000  | 804,300   | ( 15%) | 1,716,600 | 543,400   | ( 31%) |
| 78    | 16 | 3,185,000  | 1,756,000  | 26,000    | ( 1%)  | 1,429,000 | 262,700   | ( 18%) |
| TOTAL | 56 | 19,625,100 | 14,375,200 | 6,376,700 | ( 45%) | 5,269,900 | 2,460,500 | ( 46%) |

|     | AUTHORIZED FUNDING | CONTRACT ALLOCATED | 73X | INHOUSE ALLOCATED | 26X |
|-----|--------------------|--------------------|-----|-------------------|-----|
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MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
S U M M A R Y P R O J E C T S T A T U S R E P O R T  
1ST SEMIANNUAL SUBMISSION CY 76 RCS DRCHT-301

| PROJ NO.  | TITLE + STATUS   | AUTHOR-<br>RIZED<br>(8000) | CONTRACT<br>VALUES<br>(8000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(8000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|--|----------------------------|------------------------------|--|---|--|
| 1 71 6030 | AUTOMATED TAPE LAYUP SYSTEM (ATLAS)<br>ALL REPLIES FROM INDUSTRY TO THE ARMY'S OFFER TO SELL THE ATLAS<br>HAVE BEEN NEGATIVE. TERMINATION OF THIS PROJECT IS AWAITING THE<br>SUBMITTAL OF A FINAL VOUCHER FROM A CONTRACTOR.   | 2,276.0                    | 2,206.2                      | 69.0   | DEC 72                                    | DEC 78                                   |
| 1 73 6673 | MM+T PRECISION FORGING OF SPIRAL BEVEL GEARS<br>FINAL REPORT FOR SOEING VERTOL WORK DISTRIBUTED AND A FINAL<br>BRIEFING WAS GIVEN TO INDUSTRY. THE TRN CONTRACT HAS NOT BEEN<br>CLOSED OUT.  | 337.9                      | 354.2                        | 0.0  | SEP 74                                    | AUG 78                                   |
| 1 78 7036 | ISOTHERMAL ROLL-FORGING COMPRESSOR BLADE<br>THE FIRST ROLL FORGE DIE SET IS BEING FABRICATED AND THE FORGING<br>MACHINE IS BEING MODIFIED TO INCORPORATE AXIAL FORCE SYSTEM.   | 270.0                      | 230.0                        | 37.0   | JUN 79                                    | JAN 79                                   |
| 1 76 7042 | MM+T MICROHAVE CURE OF COMPOSITE MOTOR BLADE SPARS<br>THE 2430 WHZ OVEN HAS BEEN MODIFIED TO YIELD MORE UNIFORM<br>RADIATION, AND IMPROVED VENTILATION. EXPERIMENTS HAVE BEEN<br>CONDUCTED WITH SEVERAL EPOXY RESIN SYSTEMS. A CONTRACTURAL SCOPE<br>OF WORK HAS BEEN PREPARED. THE CONTRACT WITH VANDERBILT IS<br>COMPLETE. | 250.0                      | 50.0                         | 170.5  | FEB 77                                    | AUG 78                                   |
| 1 76 7046 | PRECISION CAST TITANIUM COMPRESSOR CASING<br>SEE STATUS FOR PROJECT 1777046  | 571.0                      | 518.0                        | 49.9   | SEP 78                                    | DEC 78                                   |
| 1 77 7046 | PRECISION CAST TITANIUM COMPRESSOR CASING<br>ALL WORK BY PRECISION CASTPARTS, INC. HAS BEEN COMPLETED. TWO<br>ENGINE CASES HAVE BEEN MACHINED AND PREPARED FOR ENGINE TESTS.   | 571.0                      | 518.0                        | 49.9   | SEP 78                                    | DEC 78                                   |
| 1 75 7052 | FEAS OF ULTRASONIC ASSISTED FORMATION OF TITANIUM NOSE CAP<br>***** DELINQUENT STATUS REPORT *****   | 202.0                      | 164.0                        | 38.0   | JUN 76                                    | JUN 78                                   |
| 1 77 7052 | FEAS OF ULTRASONIC ASSISTED FORMATION OF TITANIUM NOSE CAP<br>THE PROPOSAL HAS BEEN RECEIVED FROM BONDOND CORP AND HAS BEEN<br>AUDITED. PROCUREMENT IS REVIEWING THE PROPOSAL PRIOR TO CONTRACT<br>NEGOTIATIONS.   | 560.0                      | 466.0                        | 77.0   | SEP 79                                    | DEC 79                                   |
| 1 76 7054 | MM+T DIFFUSION BOND TITANIUM SPAR FABRICATION<br>TWO SPARS BONDED BY SOLAR ARE BEING TESTED FOR FATIGUE<br>CHARACTERISTICS AND MECH AND METALLURGICAL PROPERTIES. WORK IS<br>PROCEEDING ON SCHEDULE.   | 313.0                      | 70.0                         | 19.0   | JUN 77                                    | SEP 78                                   |
| 1 76 7055 | ULTRASONIC WELDING OF HELICOPTER FUELAGE STRUCTURES<br>***** DELINQUENT STATUS REPORT *****  | 180.1                      | 161.0                        | 19.1   | FEB 77                                    | JUN 78                                   |
| 1 78 7070 | CAST COMPRESSOR COMPONENTS<br>THREE WHEELS FROM THE FIRST BATCH OF PROTOTYPE CASTINGS HAVE BEEN<br>SPUN TESTED TO 120 PERCENT OF RATED SPEED WITH NEGLIGIBLE GROWTH.   | 193.0                      | 171.3                        | 23.6   | OCT 77                                    | JUL 78                                   |

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
S U M M A R Y P R O J E C T S T A T U S R E P O R T  
1ST SEMIANNUAL SUBMISSION CY 78 RCS DRCHT-301

| PROJ NO.  | TITLE + STATUS  | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|-----------|---|--------------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| 1 76 7079 | MH+T BRAIDING OF REINFORCED PLASTIC STRUCTURAL COMPONENT PLACEMENT OF THE CONTRACT HAS BEEN DELAYED BECAUSE OF LEGAL AND PROCUREMENT PROBLEMS. A FINAL REPORT IS BEING WRITTEN. THE SIKORSKY PORTION IS BEING R   | 156.0              | 136.0                   | 16.4                                | JAN 78                           | APR 79                          |
| 1 76 7086 | BARADABLE SEALS FOR COMPRESSOR BLADE TIP APPLICATIONS A REQUEST FOR CONTRACT HAS BEEN PREPARED, AND IS BEING PROCESSED.   | 91.0               | 77.0                    | 3.9                                 | FEB 78                           | JUN 80                          |
| 1 76 7091 | PROCESSING AIRCRAFT COMPONENTS USING PULTRUDED MATERIALS A SCOPE OF WORK FOR THE CONTRACT PORTION OF THE EFFORT HAS BEEN COMPLETED AND SUBMITTED TO PROCUREMENT. IN THE IN-HOUSE EFFORT, THE PULTRUSION EQUIPMENT HAS BEEN MODIFIED TO ACCOMMODATE BRAIDED MATERIAL CONTAINING THERMOPLASTIC RESIN. | 320.0              | 150.0                   | 73.7                                | FEB 78                           | SEP 80                          |
| 1 76 7103 | IMPROVED MFG-BLISK/ IMPELLER TURBINE ENGINE COMPRESSOR PARTS ***** DELINQUENT STATUS REPORT *****   | 435.0              | 417.7                   | 17.3                                | DEC 77                           | JUN 78                          |
| 1 77 7103 | IMPROVED MFG-BLISK/ IMPELLER TURBINE ENGINE COMPRESSOR PARTS ***** DELINQUENT STATUS REPORT *****   | 305.0              | 277.0                   | 0.0                                 | NOV 78                           | NOV 78                          |
| 1 77 7104 | T700 TURBINE ENGINE NOZZLE MANUFACTURING PROCESS PROJECT HAS BEEN REDIRECTED TO THAT OF COMPUTER ASSISTED ELECTRICAL DISCHARGE MACHINING OF COOLING HOLES ON STAGE 1 NOZZLE CASTINGS. CONTRACT MODIFICATION HAS FINALIZED IN AUGUST 1978.   | 36.0               | 83.4                    | 3.9                                 | JUN 79                           | MAY 79                          |
| 1 77 7108 | MANUFACTURING TECHNIQUES FOR TRANSMISSION SHAFT SEALS PROPOSALS HAVE BEEN RECEIVED IN RESPONSE TO PROCUREMENT PACKAGE. EVALUATION OF PROPOSALS IS IN PROCESS.   | 135.0              | 125.5                   | 0.0                                 | AUG 79                           | AUG 79                          |
| 1 77 7112 | COMPOSITE IMPROVED MAIN ROTOR BLADES ***** DELINQUENT STATUS REPORT *****   | 4,146.0            | 3,450.7                 | 160.0                               | SEP 78                           | SEP 78                          |
| 1 76 7114 | IMPROVED MFG TECH FOR INFRARED SUPPRESSION ON AIRCRAFT ***** DELINQUENT STATUS REPORT *****   | 223.0              | 141.0                   | 9.0                                 | SEP 77                           | JUN 78                          |
| 1 77 7114 | MFG TECHNIQUES FOR INFRARED SUPPRESSION AIRCRAFT COMPONENTS OV-1 SUPPRESSOR HAD TO BE REDESIGNED, RESULTING IN A 5 MONTH SCHEDULE SLIPPAGE. CONTRACT FOR LASER CUTTING AND SPIN FORMING SHOULD BE LET DURING NEXT REPORTING PERIOD.   | 510.0              | 0.0                     | 51.0                                | APR 78                           | SEP 78                          |
| 1 77 7119 | NON-DESTRUCTIVE EVALUATION TECH FOR COMPOSITE STRUCTURES LITERATURE SEARCH OF NDE OF COMPOSITES HAS COMPLETED. WORK HAS BEGUN ON THE USE OF ACOUSTIC EMISSION AS AN IN-PROCESS NDE TECHNIQUE TO MONITOR RESIDUAL STRESSES IN FIBER REINFORCED COMPOSITES DURING CURE.                               | 199.0              | 18.0                    | 134.0                               | SEP 80                           | SEP 80                          |

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
SUMMARY PROJECT STATUS REPORT  
1ST SEMIANNUAL SUBMISSION CY 78 RCB DRCHT-301

| PROJ NO.  | TITLE + STATUS  | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|-----------|---|--------------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| 1 78 7119 | NON-DESTRUCTIVE EVALUATION TECH FOR COMPOSITE STRUCTURES<br>NO WORK ON NOE OF COMPOSITES WAS PERFORMED ON THIS PROJECT DURING THIS PERIOD.  | 96.0               | 0.0                     | 0.0                                 | SEP 80                           | SEP 80                          |
| 1 78 7121 | INTEGRALLY HEATED + PRESSURIZED TOOLING FAULTS ROTOR BLADES<br>A CONTRACT FOR COMPETITIVE BIDDING HAS BEEN WRITTEN AND FORWARDED TO AMRC PROCUREMENT.   | 200.0              | 210.0                   | 2.4                                 | JUN 79                           | JUN 79                          |
| 1 78 7123 | CONTINUOUS BALANCING OF HELICOPTOR SHAFTING<br>RFP AS ISSUED IN MAY. PROPOSALS HAVE BEEN RECEIVED AND ARE CURRENTLY BEING EVALUATED BY THE APPLIED TECHNOLOGY LABORATORY AT PORT EUSTIS, VA.  | 120.0              | 90.0                    | 0.0                                 | JUN 79                           | JUN 79                          |
| 1 77 7144 | 1700 ENGINE NOZZLE IN-PROCESS INSPECTION<br>TECHNICAL REPORTS NOS. 2 AND 3 DETAILING WORK ACCOMPLISHED WAS NOT INCLUDED WITH AVRADCOM'S SEMIANNUAL REPORT.  | 74.0               | 83.4                    | 8.7                                 | MAY 77                           | MAY 79                          |
| 1 78 7144 | 1700 ENGINE NOZZLE IN-PROCESS INSPECTION<br>THE REQUEST TO PROCEED WITH THE FUNDING OF PHASE 2 EFFORTS WAS FORWARDED TO PROCUREMENT.  | 74.0               | 0.0                     | 0.0                                 | NOV 79                           | NOV 79                          |
| 1 78 7155 | MFG METHODS FOR IMPROVED HIGH PERFORMANCE HELICOPTOR GEARS<br>A MODEL GEAR FROM THE UN-1 TRANSMISSION HAS BEEN SELECTED AND BLUEPRINTS OBTAINED FROM BELL. EXPLICIT PERMISSION TO USE THIS GEAR IS BEING SOUGHT. AN EVAL TEST PLAN HAS BEEN OBTAINED FROM BELL. PROCUREMENT PKG HAS PASSED THE TEST OF AN UNSOL PROPOSAL. | 461.0              | 360.0                   | 55.7                                | NOV 80                           | NOV 80                          |
| 1 76 7156 | ULTRASONICALLY ASSISTED MACHINING FOR SUPERALLOYS.<br>MFG PREPARED AND SENT TO SONOBOND CORP. QUOTE CAME BACK MUCH HIGHER THAN ORIGINAL UNSOLICITED PROPOSAL. DCAA AUDIT COMPLETED IN MARCH. PROCUREMENT IS NEGOTIATING WITH SONOBOND PRESENTLY.  | 240.0              | 489.3                   | 5.1                                 | MAY 78                           | JAN 81                          |
| 1 76 7164 | FILAMENT WINDING PRECISION RESIN IMPREGNATION SYSTEM<br>MATERIALS HAVE BEEN RECEIVED AND EQUIPMENT AND PROCESSES HAVE BEEN DETERMINED. PROCESS EVALUATION OF VARIABLES ASSOCIATED WITH WINDING OF 8-GLASS HAS BEEN INITIATED. A CONTRACT EXTENSION HAS BEEN REQUESTED AND IS IN THE PROCESS OF BEING GRANTED.             | 90.0               | 89.2                    | 0.0                                 | JUN 77                           | JUN 78                          |
| 1 78 7183 | SEMI-AUTO COMPOSITE MFG 8Y8- HELICOPTER FUSELAGE STRUCTURES<br>THE CONTRACT WAS AWARDED TO HUGHES HELICOPTER. THE SELECTION OF A SUBCONTRACTOR, TO BE EITHER GRUMMAN OR NORTHROP, IS IN PROCESS.  | 245.0              | 191.0                   | 9.3                                 | MAR 81                           | JUN 79                          |
| 1 77 7197 | FABRICATION OF INTEGRAL ROTORS BY JOINING<br>CONTRACT MONIES WERE HIRED TO THE AIR FORCE. THE CONTRACT EFFORT WAS INITIATED ON 1 MAY 78.  | 300.0              | 240.0                   | 14.0                                | DEC 80                           | AUG 80                          |

S U M M A R Y P R O J E C T S T A T U S R E P O R T  
1ST SEMIANNUAL SUBMISSION CY 78 RCS DRCHT-301

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM

| PROJ NO.  | TITLE + STATUS  | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LASOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|-----------|---|--------------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| 1 77 7238 | PRECISION FORGED ALUMINUM POWDER METALLURGY HELICOPTER COMPONENTS HAVE BEEN HIRED TO THE AIR FORCE AND AN RFP FOR HELICOPTER COMPONENTS WAS PREPARED AND ISSUED.  | 72.6               | 0.0                     | 11.4                                | MAR 79                           | MAR 79                          |
| 1 78 7240 | MACHINING METHODS FOR ESR 4340 STEEL F/HELICOPTERS RFG SUBMITTED TO HUGHES HELICOPTER AND RETURNED. IT IS BEING PROCESSED AND WILL SOON BE AVAILABLE FOR ACTION. HUGHES WILL WORK WITH WEICUT RESEARCH ASSOCIATES INC TO ESTABLISH THE MACHINING PARAMETERS.  | 117.0              | 100.0                   | 13.6                                | SEP 78                           | MAR 79                          |
| 1 78 7241 | HOT ISOSTATIC PRESSING OF TITANIUM CASTINGS<br>AN RFP IS BEING PREPARED BASED ON SIKORSKY'S PROPOSAL. INFORMATION WAS SENT TO PROCUREMENT 1 JUNE 78.  | 126.0              | 0.0                     | 14.5                                | MAR 79                           | MAR 81                          |
| 1 77 7258 | THIN WALL MANTECH FOR RPV SENSOR DOWNS<br>A LIBRARY SEARCH OF ALL DOD WORK AND REPORTS ON CLEAR PLASTIC MATERIALS AND COATINGS HAS BEEN PERFORMED AND REPORTS HAVE BEEN ORDERED.  | 35.0               | 0.0                     | 2.6                                 | AUG 80                           | OCT 78                          |
| 1 77 7281 | SURVEY OF COMPOSITE MANTECH F/ARMY AIRCRAFT STRUCTURES<br>FOURTEEN OF THE MAJOR AVIATION CONTRACTORS WERE VISITED TO ASSESS AND COMPARE STATE-OF-THE-ART COMPOSITE MANUFACTURING TECHNOLOGY.  | 85.0               | 50.0                    | 20.9                                | SEP 78                           | SEP 78                          |
| 1 78 7284 | SUPERPLASTIC FORMING OF TITANIUM FOR HELICOPTER COMPONENTS<br>SURVEY OF HELICOPTER AIRFRAME MFRS CONDUCTED TO DETERMINE THE TYPES OF COMPONENTS THAT HAVE POTENTIAL FOR MFR BY SUPER PLASTIC DIFFUSION BONDING. A MORE IN DEPTH REVIEW WILL BE CONDUCTED BY THE CONTRACTOR. PROPOSAL FROM CONTRACTOR BEING REVIEWED.    | 120.0              | 103.0                   | 0.6                                 | DEC 78                           | FEB 81                          |
| 1 78 7285 | CAST TITANIUM COMPRESSOR IMPELLERS<br>AN RFP WAS ISSUED. PROPOSALS RECEIVED AND EVALUATION OF THE PROPOSALS IS CURRENTLY UNDERWAY.  | 150.0              | 0.0                     | 14.8                                | JUN 78                           | AUG 79                          |
| 1 78 7286 | SUPERALLOY POWDER PRODUCTION FOR TURBINE COMPONENTS<br>SCOPE OF WORK HAS BEEN ESTABLISHED. PROPOSALS HAVE BEEN RECEIVED AND ARE BEING EVALUATED.  | 220.0              | 0.0                     | 22.8                                | SEP 78                           | SEP 80                          |
| 1 78 7287 | PRODUCTION METHODS FOR MULTI-ELEMENT MODULES F/ARRAY ANTENNA<br>A CONTRACTOR WILL AUTOMATE METHODS OF MAKING AND TESTING PHASE SHIFTER MODULES. THEY WILL BE BUILT USING HYBRID TECHNIQUES. THE SOTAS OFFICE DOES NOT KNOW WHETHER THE CONTRACTOR WILL USE DIODE OR PERRITE PHASE SHIFTERS. FOUR FIRMS BID ON THE WORK. | 240.0              | 0.0                     | 4.2                                 | DEC 80                           | DEC 80                          |
| 1 74 8008 | BROADBODDS LAY UP SYSTEM (CAM RELATED)<br>***** DELINQUENT STATUS REPORT *****  | 700.0              | 102.6                   | 226.7                               | MAR 75                           | OCT 78                          |

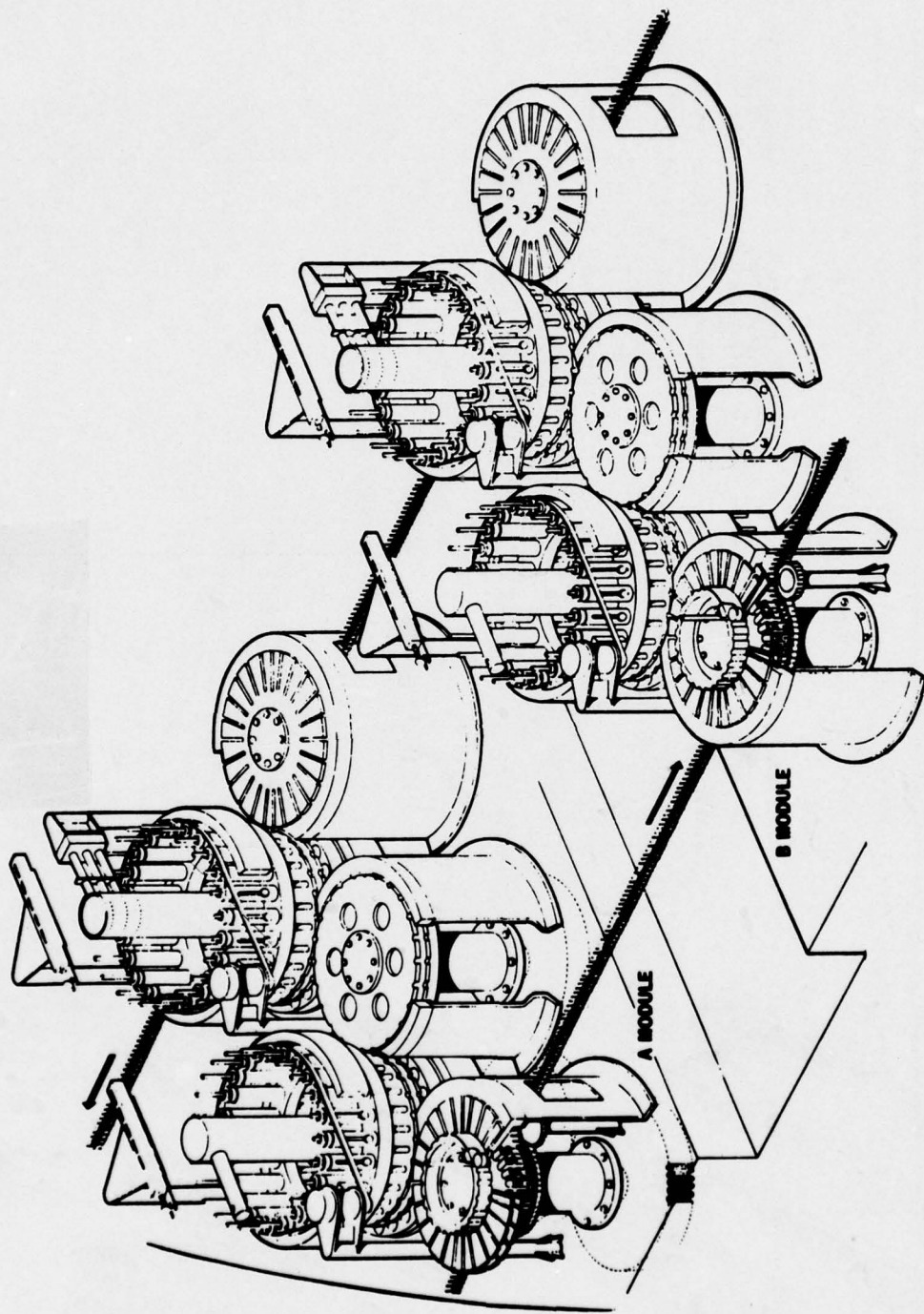


MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
S U M M A R Y P R O J E C T S T A T U S R E P O R T  
1ST SEMIANNUAL SUBMISSION CY 76 RCB DRCHT-301

| PROJ NO.  | TITLE + STATUS   | AUTHO-<br>RIZED<br>(\$000) | CONTRACT<br>VALUES<br>(\$000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(\$000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|--|----------------------------|-------------------------------|---|---|--|
| 1 75 8017 | EROSION RESISTANT LEADING EDGE FOR HELICOPTOR ROTOR BLADES<br>THE HUGHES PORTION OF THE MODIFIED CONTRACT HAS BEEN COMPLETED,<br>AND A FINAL REPORT IS BEING WRITTEN. THE SIMORSKY PORTION IS<br>BEING REEVALUATED IN VIEW OF A COST OVERRUN, AND MAY BE<br>TERMINATED.  | 200.0                      | 152.0                         | 41.4  | MAY 76                                    | SEP 79                                   |
| 1 74 8035 | PROD OF TRANSPARENT FORMS OF POLYOLEFIN FOR LTMT ARMOR APPLN<br>NO PROGRESS HAS BEEN MADE DUE TO DIFFICULTIES IN ACQUIRING FILMS<br>AND NEGOTIATING AN AMENDED CONTRACT. THE NEGOTIATION HAS BEEN<br>COMPLETED, AND THE REQUIRED FILMS ARE NOW AVAILABLE. CONTRACT<br>WORK WILL BE INITIATED JULY 76.                          | 125.0                      | 125.0                         | 28.0  | JUN 75                                    | MAR 79                                   |
| 1 75 8035 | PROD OF TRANSPARENT FORMS OF POLYOLEFIN FOR LTMT ARMOR APPLN<br>NO WORK HAS BEEN ACCOMPLISHED. WORK ON THIS PROJECT WILL BE<br>INITIATED UPON THE COMPLETION OF THE 74 EFFORT.   | 144.0                      | 36.0                          | 83.0  | SEP 76                                    | MAY 79                                   |
| 1 76 8045 | FIBER-REINFORCE PLASTIC HELICOPTER TAIL ROTOR ASSEMBLY<br>THE CONTRACT EFFORT WAS TERMINATED BECAUSE THE POTENTIAL FOR COST<br>SAVINGS HAS BEEN LOST DUE TO INCREASING DESIGN COMPLEXITY AND<br>EXCESSIVE SCHEDULE SLIPPAGES WHICH HAVE ELIMINATED THE<br>POSSIBILITY OF IMPLEMENTATION.                                       | 285.0                      | 235.0                         | 47.0  | FEB 78                                    | OCT 78                                   |
| 1 76 8045 | FIBER REINFORCED PLASTIC HELICOPTER TAIL ROTOR ASSEMBLY<br>IN VIEW OF THE CANCELLATION OF THE TECHNICAL EFFORT OF THIS<br>PROGRAM, THIS PROJECT WILL BE TERMINATED AS OF THE SAME DATE OF<br>THE TERMINATION OF THE 76 EFFORT. FUNDS WILL BE USED TO SUPPORT<br>THE COMPLETION OF THE IN-HOUSE PORTION OF THE 76 EFFORT.       | 275.0                      | 225.0                         | 10.0  | FEB 78                                    | OCT 78                                   |
| 1 74 8046 | *8M COOLED AXIAL TURBINE BLADE DISK/COOLING PLATE FAB(CUTTAS)<br>FINAL REPORTS ON PHASE 1 AND 2 ARE AVAILABLE. FIFTY 1ST STAGE<br>BLADES ARE READY FOR ENGINE TESTS. A FINAL REPORT IS IN PRINTING   | 809.0                      | 741.0                         | 84.0  | DEC 75                                    | JUL 78                                   |
| 1 74 8091 | ADVANCED ADHESIVES FOR TRANSPARENT ARMOR<br>THE FINAL CONTRACT WAS AWARDED TO GOODYEAR AEROSPACE CORPORATION.  | 202.0                      | 80.0                          | 122.0   | JUN 75                                    | DEC 78                                   |
| 1 74 8120 | IMPROVED MCPTR SKIN MATL BY CONTROLLED SOLIDIFICATION+TMT<br>***** DELINQUENT STATUS REPORT *****  | 275.0                      | 175.4                         | 101.5   | JUN 75                                    | JUN 78                                   |
| 1 75 8120 | IMPROVED MCPTR SKIN MATERIAL BY CONTRLD SOLIDIFICATION + TMT<br>ALUM BELLCRANK DIE FORGINGS WERE MACHINED AND PREPARED WITH THE<br>INSTALLATION OF BUSHING AND BEARING. THE BELLCRANK ASSEMBLIES<br>WERE INSPECTED AND TEST FIXTURE COMPONENTS DESIGNED AND<br>FABRICATED. COMMERCIAL PURITY OF 7075-T73 IS BEING REEVALUATED. | 250.0                      | 175.0                         | 42.0  | JUN 76                                    | APR 79                                   |
| 1 75 8129 | COLUMBIUM ALLOY TURBINE ENGINE COMPONENTS<br>PRELIMINARY THERMAL FATIGUE TESTS HAVE BEEN COMPLETED. THE DEATH<br>OF TWO PERSONS DIRECTLY INVOLVED WITH THIS EFFORT HAVE CAUSED<br>DELAYS AND HAVE NECESSITATED A REDIRECTION OF THE PROGRAM.   | 250.0                      | 169.4                         | 66.6  | APR 76                                    | DEC 78                                   |

SUMMARY PROJECT STATUS REPORT  
1ST SEMIANNUAL SUBMISSION CY 78 RCS DRCHT-501

| PROJ NO.  | TITLE + STATUS  | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|-----------|---|--------------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| 1 75 8136 | MM+T HIGH STRENGTH FLEXIBLE CARGO RESTRAINT DEVICES<br>IMPROVED KEVLAR 29 WEBBINGS WERE TESTED, AND EXHIBITED THE<br>ANTICIPATED AND DESIRED STRUCTURAL EFFICIENCY OF 85 PERCENT. IN<br>ABRASION TESTS THESE WEBBINGS PERFORMED POORLY, SOLUTION COATING<br>WILL BE EXAMINED AS A SOLUTION TO THE ABRASION PROBLEM. | 150.0              | 63.2                    | 86.0                                | AUG 75                           | AUG 78                          |
| 1 75 8148 | PROCESSING ADVANCED GEAR MATERIALS<br>FOUR SQUARE GEAR TESTING HAS BEEN INITIATED. BASE LINE PROPERTIES<br>FOR AISI 9210 AND VASCO X-2 HAVE BEEN ESTABLISHED.   | 193.0              | 84.0                    | 110.0                               | OCT 76                           | SEP 78                          |
| 1 76 8148 | PROCESSING ADVANCED GEAR MATERIALS<br>FOUR SQUARE GEAR TESTING HAS BEEN INITIATED. BASE LINE PROPERTIES<br>FOR AISI 9210 AND VASCO X-2 HAVE BEEN ESTABLISHED.   | 150.0              | 34.0                    | 104.0                               | DEC 78                           | DEC 78                          |
| 1 75 8154 | *CADAM OF EXTRUSION DIES FOR ALUMINUM, TI AND STEEL PARTS<br>TECH REPORT HAS BEEN REVIEWED AND RETURNED TO CONTRACTOR FOR<br>PRINTING AND DISTRIBUTION. AVRADCOM REPORT NO TR 78-29 AND AMHRC<br>CTR 78-26 HAVE BEEN ASSIGNED TO THE REPORT.  | 185.5              | 160.7                   | 24.8                                | NOV 75                           | JUN 78                          |



**ARMAMENT R&D COMMAND**  
**ARMAMENT MATERIEL READINESS COMMAND**  
**(ARRADCOM, ARRCOM)**  
**(AMMUNITION)**

[illegible]

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| 70    | 1   | 1,252,000   | 1,217,000  | 1,214,000  | ( 99%) | 35,000     | (100%) |
| 71    | 1   | 110,000     | 90,000     | 90,000     | (100%) | 20,000     | (100%) |
| 72    | 1   | 2,045,900   | 445,900    | 445,900    | (100%) | 1,600,000  | (100%) |
| 73    | 4   | 9,133,500   | 5,410,400  | 5,388,500  | ( 99%) | 3,725,100  | ( 45%) |
| 74    | 15  | 15,971,400  | 6,137,900  | 7,752,400  | ( 94%) | 7,813,500  | ( 79%) |
| 75    | 27  | 25,414,200  | 10,325,300 | 9,239,200  | ( 89%) | 13,008,900 | ( 79%) |
| 76    | 56  | 35,386,500  | 15,684,100 | 12,605,600 | ( 80%) | 19,702,400 | ( 80%) |
| 77    | 20  | 6,384,500   | 3,668,900  | 2,615,500  | ( 71%) | 2,715,600  | ( 73%) |
| 77    | 50  | 26,078,400  | 11,591,600 | 5,662,700  | ( 33%) | 14,466,800 | ( 55%) |
| 78    | 48  | 24,843,000  | 7,732,000  | 670,900    | ( 8%)  | 17,111,000 | ( 5%)  |
| TOTAL | 285 | 144,619,400 | 64,323,100 | 43,864,700 | ( 68%) | 80,296,500 | ( 56%) |
|       |     |             |            |            |        | 46,825,000 | ( 58%) |

|     | AUTHORIZED FUNDING | CONTRACT ALLOCATED | 44X | INHOUSE ALLOCATED | 55X |
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MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
SUMMARY PROJECT STATUS REPORT  
1ST SEMI-ANNUAL SUBMISSION CY 78 RCS DRCHT-301

| PROJ NO.  | TITLE + STATUS   | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|-----------|--|--------------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| 5 75 1265 | EVAL EXHAUST FILTER SYSTEM TO ESTABLISH DESIGN CRITERIA<br>A TECHNICAL REPORT ON GAS FILTER PERFORMANCE WAS COMPLETED.   | 250.0              | 20.0                    | 234.0                               | JUN 74                           | JUL 78                          |
| 5 75 1250 | EVALUATE WHITE PHOSPHOROUS LEAK DETECTION PROTOTYPE<br>THE DEVELOPMENT OF A WP LEAKAGE DETECTION SYSTEM WAS COMPLETED.<br>THE SYSTEM UTILIZES INDUCTIVE HEATING THERMAL STRESSING OF<br>MUNITIONS COUPLED WITH A SENSITIVE FLAME EMISSION DETECTOR. THE<br>SYSTEM USES A MINIMUM AMOUNT OF ENERGY.                                   | 325.0              | 120.9                   | 195.0                               | JUN 77                           | JUN 78                          |
| 5 77 1264 | ADV TECH FOR SUPPRESSIVE SHIELD OF HAZARDOUS PROD + SUP UP<br>ADDITIONAL TESTS WITH UP TO 900 LBS OF M10 PROPELLANT WERE<br>CONDUCTED IN THE GROUP 5 SHIELD. SRI IS ANALYZING THIS DATA. A<br>HANDBOOK COVERING TASK /3 TESTS WAS DISTRIBUTED IN JAN 78.   | 100.0              | 0.0                     | 46.0                                | JUN 77                           | JUN 77                          |
| 5 76 1264 | ADV TECHNOL FOR SUPPRESSIVE SHIELD OF HAZARD PROD-SUP OPER<br>THE ONLY PROGRESS SHOWN INCLUDES ADDITIONAL TESTS WITH UP TO<br>900LB OF M10 PROP IN THE GPS SHIELD AND DATA REDUCTION BY<br>SRI. ALSO THE FINAL HANDBOOK HAS BEEN DISTRIBUTED IN JAN 78. SRI<br>REPT ON GROUP SHIELD DATA ALSO REL IN JAN 78. COPIES OF EA<br>COMING. | 1,450.0            | 170.0                   | 1,219.0                             | DEC 76                           | JUL 78                          |
| 5 76 1274 | WHITE PHOSPHORUS DRY FILLING LINE<br>THE ACCEPTANCE TESTING WITH THE 105 MM M40 AND THE 2.75-INCH M156<br>HAS BEEN COMPLETED. A REQUEST FOR PROVE OUT FUNDING TO RUN THE<br>60MM ON THE DRY FILL LINE AND ON THE 60MM LAP LINE TO PROVIDE<br>TESTING OF BOTH LINES WAS SUBMITTED TO THE PH-PBM                                       | 1,200.0            | 0.0                     | 1,180.0                             | DEC 76                           | JUL 78                          |
| 5 75 1284 | IMPROVEMENT + MOD OF INSP AIDS P/DEF + PROT ITEMS<br>ANALYSIS OF HIGH FLOW RATE PENETROMETERS DRAFT REPORT WAS<br>REVIEWED BY THE GOVERNMENT. THE CONTRACTOR CONTINUED THE DESIGN<br>AND CONSTRUCTION EFFORT FOR THE PROTOTYPE MODEL. TESTING AND<br>EVALUATION PROCEDURES FOR THE PROTOTYPE MODEL ARE BEING PREPARED.               | 424.0              | 300.0                   | 74.0                                | JUN 77                           | MAR 79                          |
| 5 77 1295 | MODERNIZATION OF CHARCOAL FILTER TEST EQUIPMENT<br>THE RPP HAS BEEN PREPARED AND SENT TO VARIOUS INDUSTRIAL<br>ORGANIZATIONS. ONLY ONE RESPONSIVE BID WAS SUBMITTED. THE<br>PROPOSAL WAS REVIEWED BY A TECHNICAL COMMITTEE AND IS CONSIDERED<br>TECHNICALLY SOUND. IT IS EXPECTED THAT A CONTRACT WILL BE SIGNED BY<br>JUNE 1978.    | 245.0              | 175.0                   | 20.0                                | AUG 78                           | JAN 79                          |
| 5 76 1296 | *MT FOR CB FILTERS<br>SP2 A VACUUM CONVEYOR SYSTEM WAS ACQUIRED AND PROVEN OUT. SP2 A<br>FILLING PROCESS WAS FINALIZED. SP3 A CONTRACT SCOPE WAS PREPARED<br>FOR EVALUATING DEEP BED COMPACTION TECHNIQUES. SP4 PRELIMINARY<br>DATA FOR MOISTURE ADSORPTION BY CHARCOAL.   | 350.0              | 0.0                     | 350.0                               | JUN 77                           | JUL 78                          |

S U M M A R Y P R O J E C T S T A T U S R E P O R T  
MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
1ST SEMI-ANNUAL SUBMISSION CY 78 RCB ORCMT-301

| PROJ NO.  | TITLE + STATUS  | AUTHORIZED<br>RIZED<br>(\$000) | CONTRACT<br>VALUES<br>(\$000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(\$000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|---|--------------------------------|-------------------------------|---|---|--|
| 0 78 1296 | MT FOR CB FILTERS<br>SPI CONTRACT SCOPES HAVE BEEN PREPARED FOR EXISTING TECHNIQUES FOR DIAGNOSTIC FILTER TESTING AND HYDROCARBON PULSE TESTING. SPZ DIRECT DISPERSION CONCEPT MODEL WAS BUILT. SP3 CONTRACT SCOPE FOR EVALUATING COMPACTING CHARCOAL IN DEEP BED FILTERS.  | 654.0                          | 230.0                         | 113.4   | MAR 79                                    | MAR 79                                   |
| 5 76 1311 | MM-T-4229 REFIL KIT COMPONENT-CHEMICAL AGENT ALARM<br>FABRICATION OF FILTER AND CAPSULE ASSEMBLY MACHINES HAVE BEEN INITIATED. PRELIMINARY LAYOUT OF PRODUCTION FACILITY IS COMPLETE. IMPREGNATION EQUIPMENT IS BEING FABRICATED. MATERIALS FOR CONTINUOUS OPERATION HAVE BEEN PROCURED.                              | 570.0                          | 177.0                         | 269.0   | DEC 77                                    | JAN 79                                   |
| 5 77 1312 | MM-T FOR PAPER, CHEMICAL AGENT DETECTOR M8<br>WORK WITH THE DYES HAS BEEN HALTED PENDING THE RESULTS OF TESTS FOR MUTAGENICITY AND CARCINOGENICITY. INITIAL TESTS HAVE CONFIRMED THE POTENTIAL MUTAGENIC EFFECT OF THE GREEN DYE.   | 118.0                          | 0.0                           | 37.1  | MAR 78                                    | AUG 79                                   |
| 5 76 1313 | *ASSESSMENT OF HAZARDS IN PRODUCTION OF PYROTECHNIC COMP.<br>ASSESSMENT COMPLETED. RUTURE DISC SUPPRESSION REDUCED HAZARD FROM POST IGNITION OR BURN RATE. FRICTION STIMULI MUST BE HIGHER THAN EXPECTED TO ACHIEVE EXPLOSION. WATER IS LESS EFFECTIVE THAN HALON. QTV DIST FACILITY AND SHIPPING COSTS CAN DIMINISH. | 550.0                          | 0.0                           | 550.0   | OCT 76                                    | JUL 78                                   |
| 5 75 1316 | ADVANCED TECHNOLOGY FOR PROCESSING SMOKE GRANADES<br>CSL WAS DISTRIBUTED REPORT NO. ARCSL-TR-78009. AT PBA, ALL EQUIPMENT HAS BEEN INSTALLED AND EVALUATION IS IN PROGRESS. EFFORTS TO DATE HAVE PROVEN THE BASIC CONCEPTS TO BE EXTREMELY PROMISING.   | 500.0                          | 0.0                           | 488.0   | DEC 77                                    | JUN 78                                   |
| 5 77 1320 | PILOT STATIONS FOR FILLING + CLOSING IMPROVED WP MUNITION<br>A CONTRACT FOR AN INERTIA WELDER WAS AWARDED IN SEP 77. THE DESIGN HAS BEEN APPROVED. THE MACHINE IS TO BE READY FOR TESTING IN DEC 78. A CONTRACT FOR A DRILL AND PIN MACHINE WAS AWARDED IN MAY. ITS DELIVERY IS PLANNED FOR JAN 79.                   | 374.0                          | 240.0                         | 69.0  | JUN 77                                    | SEP 79                                   |
| 5 78 1320 | PILOT LINE FOR IMPROVEMENT OF WP MUNITIONS<br>PROJECT FUNDS WERE RECEIVED IN MAY 78.  | 375.0                          | 0.0                           | 0.0   | SEP 79                                    | SEP 79                                   |
| 5 77 1327 | IMPROVEMENT AND MODERNIZATION OF GAS MASK LEAKAGE TESTING<br>RFD WAS ISSUED AND FIVE PROPOSALS WERE RECEIVED AND REVIEWED. BASED ON THE TECHNICAL EVALUATION AND BEST BUY ANALYSIS THE CONTRACT WAS AWARDED TO SOUTHERN RESEARCH INSTITUTE.   | 309.0                          | 193.0                         | 6.3   | MAR 79                                    | MAR 79                                   |
| 0 78 1335 | MFG TECH FOR NEW PROTECTIVE MASK<br>MANUFACTURING PLAN IDENTIFYING EQUIPMENT AND TOOLING REQUIREMENTS AND PLANT LAYOUT COMPLETED. DIPEC SEARCH UNDERWAY. CONTRACY SCOPES HAVE BEEN DRAFTED.   | 724.0                          | 614.0                         | 17.1  | JUN 79                                    | JUN 79                                   |

S U M M A R Y P R O J E C T S T A T U S R E P O R T  
18T SEMIANNUAL SUBMISSION CY 78 RCB DRGMT-301

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM

| PROJ NO.  | TITLE + STATUS  | AUTHOR-<br>RIZED | CONTRACT<br>VALUES | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(\$000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|---|------------------|--------------------|---|---|--|
|           |   | (\$000)          | (\$000)            | (\$000)   |   |  |
| 5 76 1336 | PRODUCTION FILLING EQUIP TECH FOR WP MUNITIONS<br>CALIBRATION OF THE PRODUCTION CANNISTER WAS COMPLETED. THE FILL<br>TEST PROGRAM WAS INITIATED. A PROBLEM WITH THE ELECTRONIC SENSORS<br>USED TO CONTROL THE WP LEVEL IN THE HEADER TANK FOR THE FILLING<br>SYSTEM WAS RESOLVED. TESTING IS TO BE COMPLETED BY JUN78 | 800.0            | 100.0              | 690.0   | SEP 77                                    | JUL 78                                   |
| 5 77 1337 | ENGR STUDY F/ADAPT TRP OF UK TECHLCMR SYS W/HP/BUTYL GREN<br>HARDWARE AND CHEMICALS FOR GRENADE ASSEMBLY AND TESTING WERE<br>RECEIVED. ALL EQUIPMENT FOR INITIAL STUDY IS IN BLOC ES265.<br>CONTRACT HAS BEEN AWARDED FOR A KNEADER-EXTRUDER.   | 250.0            | 36.0               | 214.0   | MAR 78                                    | SEP 78                                   |
| 5 77 1337 | ENGR STUDY F/ADAPT TRP OF UK TECHLCMR SYS W/HP/BUTYL GREN<br>FIRING TESTS OF GRENADES MADE FROM A NEW HP/BUTYL FORMULATION<br>WERE UNSUCCESSFUL. PROCESS STUDIES WITH GEL AND MIX PREPARATION<br>ARE 50 PER CENT COMPLETE. HAZARDOUS ENGINEERING STUDIES ARE IN<br>PROGRESS ON THE PLANETARY MIXER USING HP MIX.      | 354.0            | 61.0               | 106.0   | JAN 79                                    | APR 79                                   |
| 8 78 1339 | MANUFACTURING TECHNOLOGY FOR PREPARATION OF 8-1 DYE<br>PILOT EQUIPMENT HAS BEEN DEFINED AND PURCHASE REQUISITIONS FOR<br>EQPT, MATERIALS, AND CHEMICALS HAVE BEEN RELEASED. PREPARATION OF<br>PILOT PLANT AREA, ACCEPTANCE TEST PLAN, PROTECTIVE REQUIREMENTS,<br>AND SOP'S HAS BEEN INITIATED.                       | 461.0            | 0.0                | 99.5  | JUN 79                                    | JUN 79                                   |
| 8 78 1345 | MM+T FOR BIOLOGICAL WARNING SYSTEM<br>CHEMICALS, CHEMICAL ANALYSIS EQUIPMENT, AND PILOT PLANT EQUIPMENT<br>HAVE BEEN ORDERED. SPECIFICATIONS FOR CHEMICAL AND BIOLOGICAL<br>PURITY AND STERILITY REQUIREMENTS FOR REFILL KIT CHEMICALS ARE<br>BEING ESTABLISHED.  | 480.0            | 70.0               | 13.0  | JAN 80                                    | JAN 80                                   |
| 5 75 3062 | *PELLET THERMAL POWER SUPPLY TECHNOLOGY<br>BATTERY PERFORMANCE HAS CLOSELY GROUPED WITH RESPECT TO 2.75<br>ROCKET SPECIFICATIONS HOWEVER EXTREME PERFORMANCE DISPLAYED<br>CONSIDERABLE SPREAD WITH NO CLEAR CORRELATION TO PROCESS OR<br>FABRICATION PARAMETER VARIATIONS. EFFORT CONTINUES UNDER S 76<br>3062.       | 150.0            | 87.0               | 63.0  | JUL 76                                    | SEP 78                                   |
| 5 76 3062 | PELLET THERMAL POWER SUPPLY TECHNOLOGY<br>A DECISION WAS MADE TO CONDUCT THE FOLLOW-ON WORK IN HOUSE.<br>EQUIPMENT IS BEING PURCHASED FOR IN-HOUSE PRODUCTION OF DFB<br>POWDERS. SAMPLES OF ON-HAND COMMERCIAL POWDERS WERE RETAINED FOR<br>EVALUATION OF DIFFERENCES IN PHYSICAL CHARACTERISTICS.                    | 150.0            | 0.0                | 76.0  | JAN 78                                    | MAY 79                                   |
| 5 75 3077 | *PRODUCTION METHODOLOGY FOR VALIDATION OF ELECTRONIC FUSES<br>PROJECT COMPLETED. THE RESULTS INDICATED THAT A TEN MODULE<br>VALIDATION FACILITY IS TECHNICALLY AND ECONOMICALLY BENEFICIAL.<br>THE FINAL REPORT WHICH CONTAINS THE TEN MODULES DETAIL DESIGN HAS<br>BEEN COMPLETED.                                   | 250.0            | 0.0                | 250.0   | OCT 75                                    | SEP 78                                   |

S U M M A R Y P R O J E C T S T A T U S R E P O R T  
MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
1ST SEMIANNUAL SUBMISSION CY 76 RCS DRG-MT-301

| PROJ NO.  | TITLE + STATUS  | AUTHORIZED (8000) | CONTRACT VALUES (8000) | EXPENDED LABOR AND MATERIAL (8000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|-----------|---|-------------------|------------------------|------------------------------------|----------------------------------|---------------------------------|
| 5 76 3095 | MORTAR-ARTY BLISTIC SIMULATIONS FOR FUZ TESTING<br>THE FUZE TESTER WAS COMPLETED. THE DRAFT OF THE FINAL REPORT AND INSTRUCTION MANUAL WERE COMPLETED. THE DRAWING PACKAGE IS ABOUT 60% COMPLETE.   | 211.0             | 0.0                    | 211.0                              | MAR 77                           | DEC 78                          |
| 5 77 3104 | *COPPER AMPULES FOR FUZE POWER SUPPLIES<br>UNION CARBIDE DESIGNED A CARTRIDGE AND WEIGHT ASSEMBLY MACHINE FOR THE COPPER AMPULE. THE DRAWING PACKAGE WAS APPROVED FOR FABRICATION UNDER THE IPF EFFORTS 5763096 AND 5776096. WILL MAKE, FILL AND SEAL COPPER AMPULES FOR P81 15 FOR M732 FUZES. | 50.0              | 33.6                   | 16.4                               | DEC 77                           | JUN 78                          |
| 5 76 3104 | *COPPER AMPULES FOR FUZE POWER SUPPLIES<br>UNION CARBIDE DESIGNED AN AMPULE ASSEMBLY MACHINE AND DESIGNED AND BUILT A CUTTER ASSEMBLY MACHINE. THE LATTER WAS BUILT AND WILL BE PLACED IN THE IPF LINE. THE FORMER WILL BE BUILT ON IPF PROJECT 5763096 AND 5773096.                            | 300.0             | 226.4                  | 73.6                               | JAN 77                           | APR 78                          |
| 5 77 3127 | *MINIATURE BEARINGS AND SHAFT MFR FOR THE XM734 FUZE<br>COIL TOOLING AND COIL ASSEMBLY MACHINE DESIGN WERE COMPLETED. FINAL TECHNICAL REPORT WILL BE ISSUED FOLLOWING HMT PROJECT 5773127.  | 90.0              | 56.0                   | 31.0                               | AUG 77                           | MAY 78                          |
| 5 77 3127 | *MINIATURE BEARINGS + SHAFT MFG FOR THE XM734 FUZE.<br>CONTRACT FOR PILOT FACILITY IN FINAL PHASE. PROVE-OUT OF THREE MACHINES IS YET TO BE ACCOMPLISHED. A SINGLE FINAL REPORT WILL BE ISSUED FOR PROJECTS 5763127, 5773127, AND 5773127. ALL OF THESE WERE CARRIED OUT UNDER ONE CONTRACT.    | 210.0             | 142.0                  | 46.0                               | APR 78                           | AUG 78                          |
| 5 76 3139 | *MAMP OF INTERCONNECTIONS FOR FLUIDIC CIRCUITS<br>THE PROJECT HAS BEEN COMPLETED. THE FINAL REPORT HAS BEEN WRITTEN AND DISTRIBUTED.  | 143.0             | 18.3                   | 126.3                              | SEP 76                           | SEP 77                          |
| 5 77 3905 | P8 127 RESERVE POWER SUPPLY MFR FOR THE XM587 FUZE<br>THE PILOT FACILITY FOR TIG WELDING OF AMPULES WAS COMPLETED. TECHNICAL PROBLEMS WITH THE P8127 PRIOR TO DTII/OTII CAUSE THE PROGRAM TO BE DELAYED WHILE DESIGN CHANGES WERE MADE. THE PROBLEMS APPEAR TO HAVE BEEN CORRECTED.             | 375.0             | 57.0                   | 35.0                               | NOV 78                           | JUL 79                          |
| 5 76 3907 | MNOS COUNTER-MEMORY CIRCUIT FOR FUZES<br>CONT TO NITRON CORP FOR METAL NITRIDE OXIDE SEMICONDUCTOR MNOS INTEGRATED CIRCUITS FOR FUZES. 100 TEST SPECIMENS ENVIRON TESTED. QA PLAN APPROV BY HOL. NO APPARENT PROBLEMS.  | 300.0             | 273.7                  | 2.8                                | SEP 79                           | SEP 79                          |
| 5 77 3947 | THICK FILM HYBRID CIRCUITS FOR XM587E2/XM724 FUZES<br>HONEYWELL IS PRODUCTION ENGINEERING A HYBRID OSCILLATOR CIRCUIT FOR THE XM587E2 FUZE. RCA IS PRODUCTION ENGINEERING THE HYBRID INTERFACE AND FIRING CIRCUIT DEVELOPED ON PROJ 2719335. MOLDED PACKAGE IS OK.                              | 150.0             | 120.0                  | 18.0                               | SEP 79                           | SEP 78                          |



SUMMARY PROJECT STATUS REPORT  
1ST SEMIANNUAL SUBMISSION CY 78 RCB DRGHT-301

| PROJ NO.   | TITLE + STATUS   | AUTHORIZED<br>(3000) | CONTRACT<br>VALUES<br>(3000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(3000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|------------|--|----------------------|------------------------------|--|---|--|
| 5 78 3947  | THICK FILM HYBRID CIRCUITS FOR XM567E2/XM724 FUZES<br>SEE TASKS BELOW.   | 530.0                | 487.0                        | 0.0  | JUL 79                                    | JUL 79                                   |
| 5 78 3947A | THICK FILM HYBRID CIRCUITS-HONEYWELL<br>HONEYWELL, HOPKINS, MN, EVALUATED MANUFACTURING PROCESSES FOR THE<br>HYBRID OSCILLATOR CIRCUIT. PARTS ARE ON HAND FOR THE NEXT RUN BUT<br>METAL CASES ARE LATE. HONEYWELL IS DOING AUTOMATED WIRE BONDING,<br>TAPE AUTOMATED BONDING AND DYNAMIC LASER TRIMMING.             | 267.0                | 245.4                        | 0.0  | JUL 79                                    | JUL 79                                   |
| 5 78 3947B | THICK FILM HYBRID CIRCUITS-RCA<br>RCA IS ASSEMBLING ENGINEERING SAMPLES OF THE HYBRID INTERFACE AND<br>FIRING CIRCUIT. SCR FIRING CHIPS HAD TO BE TESTED 100% AT RCA.<br>CIRCUITS WILL BE MOLDED INTO A PACKAGE. TEST EQUIPMENT IS BEING<br>SET UP TO TEST THE CIRCUITS AUTOMATICALLY.                               | 263.0                | 241.6                        | 0.0  | JUL 79                                    | JUL 79                                   |
| 5 74 4000  | NON-ELECTRIC DETONATOR PRODUCTION FACILITIES<br>MIXING OF PA-130 (FREE FLOW NOL) WAS SCHEDULED FOR APRIL, BUT A<br>STRIKE PRECLUDED THIS ACTIVITY. A DRAFT REPORT ON IMPROVED<br>LACQUER PROCESS WAS PREPARED.   | 549.0                | 55.0                         | 426.9  | JUN 75                                    | DEC 79                                   |
| 5 77 4000  | AUTOMATED M55 DETONATOR PRODUCTION EQUIPMENT.<br>DESIGN CONTINUED ON EQUIPMENT FOR INSPECTION OF EMPTY DETONATOR<br>CUPS. PROPOSALS WERE RECEIVED AND EVALUATED FOR EQUIPMENT TO<br>AUTOMATICALLY INSPECT FOR ALL DEFECTS. WORK PACKAGES FOR PACKOUT,<br>ULTRASONIC SEALING, AND HAZARD ANALYSIS HAVE BEEN PREPARED. | 1,000.0              | 280.0                        | 113.4  | FEB 80                                    | DEC 79                                   |
| 5 78 4000  | NON-ELECTRIC DETONATOR PRODUCTION EQUIPMENT<br>TEST RUN OF MULTI-TOOLED LOADER WAS WITNESSED AT IAAP. A SCOPE OF<br>WORK FOR EQUIP TO INTEGRATE ALL MODULES WAS INITIATED.   | 1,400.0              | 66.0                         | 0.0  | DEC 79                                    | DEC 79                                   |
| 5 74 4009  | AUTO OF EQUIP FOR A/P OF SMALL SHAPED CHARGE ROCKETS<br>SEE PROJECT 5 76 4009 FOR STATUS.  | 1,045.0              | 829.4                        | 219.6  | MAY 75                                    | DEC 78                                   |
| 5 75 4009  | AUTO OF EQUIP FOR A/P OF SMALL SHAPED CHARGE ROCKETS<br>SEE PROJECT 5 76 4009 FOR STATUS.  | 650.0                | 381.9                        | 256.3  | SEP 76                                    | DEC 76                                   |
| 5 76 4009  | AUTO OF EQUIP FOR A/P OF SMALL SHAPED CHARGE ROCKETS<br>THE EQUIPMENT MODULES HAVE BEEN DESIGNED, FABRICATED, AND<br>INTEGRATED INTO THE PACKOUT SYSTEM. CURRENTLY, THE SYSTEM IS<br>BEING PREPARED FOR ACCEPTANCE TESTS AT THE CONTRACTORS PLANT.   | 780.0                | 569.5                        | 202.4  | MAR 77                                    | DEC 78                                   |
| 5 73 4012  | FINAL ROLL MILL/PAD-MAKEUP MACHINE FOR MORTAR INCREMENTS<br>WORK HAD PREVIOUSLY BEEN COMPLETED. A FINAL STATUS REPORT WAS<br>WRITTEN DURING THIS PERIOD. FOR THIS PROJECT 74% OF THE FUNDING<br>WENT TOWARDS EQUIPMENT PROCUREMENT AND 16% WENT FOR SALARIES AND<br>PRINCES.   | 1,300.0              | 1,253.0                      | 47.0   | NOV 74                                    | JUL 78                                   |

S U M M A R Y P R O J E C T S T A T U S R E P O R T  
MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
187 SEMIANNUAL SUBMISSION CY 76 RCB DRCHT=301

| PROJ NO.  | TITLE + STATUS   | AUTHORIZED (8000) | CONTRACT VALUES (8000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|-----------|--|-------------------|------------------------|-------------------------------------|----------------------------------|---------------------------------|
| 5 75 4012 | FINAL ROLL MILL/PAD=MAKEUP MACHINE FOR MORTAR INCREMENTS<br>THE DEBUG AND INERT PROPELLANT EVALUATION OF THE DIELECTRIC<br>HEATER WAS COMPLETED. TWO-ROLL CALENDAR DEBUGGING AND INERT<br>EVALUATION IS UNDERWAY. THE IMPLEMENTATION OF UCARS AT RADFORD<br>INCREASED THE PROJECT COST BY 150K AND CAUSED 3 MO SLIPPAGE.           | 700.0             | 597.0                  | 79.0                                | JUN 76                           | JAN 79                          |
| 5 74 4013 | *CONTINUOUS NC MFG BY THE MAG, NITRATE PROCESS<br>THE WORK WAS COMPLETED. PILOT PLANT EQUIPMENT WAS INSTALLED WITH<br>THIS YEAR'S FUNDS AND DEBUGGED. THE FINAL TECHNICAL REPORT WAS<br>WORKED ON.   | 683.0             | 595.0                  | 88.0                                | DEC 74                           | MAY 78                          |
| 5 75 4013 | *CONTINUOUS NC MFG BY THE MAG, NITRATE PROCESS<br>METHODS OF PROTECTING THE PILOT PLANT FROM THE EFFECTS OF<br>SULFURIC ACID WERE EXAMINED. THE PILOT PLANT WAS PREPARED FOR<br>PROTECTIVES STORAGE.   | 113.0             | 3.0                    | 110.0                               | JUN 76                           | MAY 78                          |
| 5 76 4013 | CONTINUOUS NC MFG BY THE MAG NITRATE PROCESS<br>THE PILOT PLANT PROTECTIVE WORK WAS COMPLETED. PREPARATION OF THE<br>FINAL TECHNICAL REPORT IS CONTINUING.   | 88.0              | 80.0                   | 5.0                                 | DEC 77                           | DEC 78                          |
| 5 75 4015 | *SYSTEM FOR THE AUTOMATED PROCESSING OF BENITE-PROTOTYPE<br>A 200LB BATCH OF INGREDIENTS TRANSFERRED SUCCESSFULLY TO<br>ASSY. WATERJET CUTTING OF STRANDS WAS RECOMMENDED. A BENITE PILOT<br>LOT WAS PROCESSED THRU M490 ROUNDS SUCCESSFULLY FIRED THRU 105MM<br>GUN AT APG. SCREW EXTRUSION AND ACETONE SOLVENT RAISE SYS SAFETY. | 190.0             | 129.8                  | 60.2                                | JUN 76                           | JUL 78                          |
| 5 75 4032 | AUTOMATED EQUIP FOR ASSEMBLY OF M572E2 FUZE<br>14 PROTOTYPE ASSEMBLY MACHINES ON LINE AND ARE CURRENTLY BEING<br>USED IN INITIAL PRODUCTION OF THE M739 PD FUZE. NEW TOOLING IS<br>BEING DEVELOPED FOR MACHINE 12 DUE TO UNACCEPTABLE PERFORMANCE.   | 750.0             | 750.0                  | 0.0                                 | MAR 76                           | AUG 78                          |
| 5 76 4032 | AUTOMATED EQUIP FOR ASSEMBLY OF M572E2 FUZE<br>SEE PROJECT 5 75 4032.  | 615.0             | 461.7                  | 213.8                               | MAR 77                           | AUG 78                          |
| 5 75 4041 | AUTO EQUIPMENT FOR ASSY OF MORTAR COMPONENTS<br>NO WORK WAS ACCOMPLISHED WITH REMAINING FUNDS DURING THIS PERIOD.  | 426.0             | 198.6                  | 227.2                               | FEB 76                           | JUL 78                          |
| 5 76 4041 | AUTO EQUIP FOR ASSY OF MORTAR COMPONENTS<br>DETAILED DRAWINGS OF ALL STATIONS HAVE BEEN COMPLETED EXCEPT<br>ONE. FABRICATION OF THE POWDER WEIGH AND FILL STATION WILL BE<br>COMPLETED BY 31 JULY 76. THE INTC SCALES, FOR EMPTY AND FILLED<br>CONTAINER WEIGH, WAS ACCEPTED AT INTC, INC.   | 427.0             | 201.7                  | 217.0                               | JAN 77                           | JUL 78                          |
| 5 76 4041 | AUTO EQUIP FOR ASSY OF MORTAR COMPONENTS<br>INNOVIA'S PROPOSAL FOR BUILD AND TEST OF THE REMAINING STATIONS<br>HAS BEEN RECEIVED AND THE CONTRACT AMENDMENT WILL BE NEGOTIATED<br>IN JUNE 78. ALL SAFETY TESTS ON NC AND M10 PROPELLANT HAVE BEEN<br>COMPLETED.  | 655.0             | 543.2                  | 28.2                                | JUL 79                           | JUL 79                          |

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
SUMMARY PROJECT STATUS REPORT  
1ST SEMI-ANNUAL SUBMISSION CY 78 RCS DRCHT-301

| PROJ NO.  | TITLE + STATUS   | AUTHORIZED<br>(\$000) | CONTRACT<br>VALUES<br>(\$000) | EXPENDED<br>LABOR AND<br>MATERIAL<br>(\$000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|--|-----------------------|-------------------------------|--|---|--|
| 5 75 4050 | AUTOMATED LOADING OF PROPELLANT FLASH REDUCERS<br>INAAIP HAS IDENTIFIED LOAD LINE 88 AS SITE FOR INSTALLATION OF<br>PROTOTYPE FLASH-REDUCER MODULE WHICH WILL ALLOW ACCEPTANCE<br>TESTING USING THE BLACK POWDER CONTAINING M3 FLASH REDUCER, FUNDS<br>OF \$247.4K HAVE BEEN FORWARDED TO ARADCOM. | 785.0                 | 633.1                         | 136.3  | MAR 76                                    | MAR 79                                   |
| 5 74 4054 | PROC IMPROVED ENG P/MOD+AUTO OF ARTY PROP CHARGE MFR<br>NO CHANGE IN STATUS  | 710.0                 | 449.5                         | 256.0  | MAR 75                                    | SEP 78                                   |
| 5 76 4073 | *PHOTOFLASH COMPOSITIONS DESENSITIZED BY COATANTS<br>A DRAFT OF THE FINAL TECHNICAL REPORT HAS BEEN COMPLETED. THE<br>PHOTOFLASH FORMULATION DEVELOPED PERFORMED AS WELL AS<br>CONVENTIONAL POWDERS AND WITH IMPROVED SAFETY. THE FORMULATION<br>WILL BE PRESENTED IN THE FINAL REPORT.            | 220.0                 | 0.0                           | 218.0  | JUN 77                                    | MAY 78                                   |
| 5 77 4105 | *AUTO INCR LOG + ASSY OF PROP CHGS W/ CENT CORE IGN<br>FINAL STATUS REPORT WAS PREPARED DURING THIS PERIOD. THIS FY77<br>EFFORT PROVIDED IN-HOUSE TECH SUPPORT FOR ADEQUATE REVIEW AND<br>MONITORING OF PHASE 3 (ASSEMBLY MODULE). THE PHASE 3 EFFORT WAS<br>CARRIED OUT WITH FY76 FUNDING.        | 225.0                 | 0.0                           | 225.0  | JUN 77                                    | JUL 78                                   |
| 5 76 4105 | AUTO INCREMENT L/A OF PROP CAS WITH CENTRAL CORE IGNITERS<br>DEBUGGING OF THE ASSEMBLY MODULE CONTINUED WITH PROBLEMS BEING<br>ENCOUNTERED IN THE CONTROLS SOFTWARE. THESE PROBLEMS PLUS<br>PROBLEMS ENCOUNTERED WITH THE GFE XM203 PROP BAGS HAS CAUSED<br>FURTHER SLIPPAGE TO DEC, 1978.         | 685.0                 | 537.4                         | 144.5  | NOV 76                                    | DEC 78                                   |
| 5 77 4105 | AUTO INCR LOG + ASS OF PROP CHGS W/CENT CORE IGN<br>WORK CONTINUED ON THE DESIGN OF PHASE 4 (PACKOUT MODULE)<br>EQUIPMENT. THIS DESIGN IS 80% COMPLETE. FABRICATION OF AUTOMATIC<br>CHARGE WRAPPER EQUIPMENT WAS STARTED. INTERIM HAZARDS ANALYSIS<br>FOR PHASE 4 EORT WAS COMPLETED.              | 1,385.0               | 935.0                         | 209.1  | MAY 78                                    | JUL 78                                   |
| 5 77 4114 | POLLUTION ABATEMENT METHODS FOR P+E<br>SEE PROJECT 5 77 4114   | 500.0                 | 0.0                           | 249.9  |   | NOV 79                                   |
| 5 73 4114 | METHODS TO MINIMIZE ENVIRONMENTAL CONTAMINATION<br>SEE PROJECT 5 77 4114.  | 6,608.5               | 3,077.0                       | 1,499.0                                      |   | JUN 79                                   |
| 5 74 4114 | METHODS TO MINIMIZE ENVIRONMENTAL CONTAMINATION<br>SEE PROJECT 5 77 4114.  | 5,117.0               | 1,843.0                       | 1,592.0                                      |   | JUN 79                                   |
| 5 75 4114 | METHODS TO MINIMIZE ENVIRONMENTAL CONTAMINATION<br>SEE PROJECT 5 77 4114.  | 5,836.4               | 2,007.1                       | 1,842.0                                      |   | JUN 79                                   |

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
SUMMARY PROJECT STATUS REPORT  
1ST SEMI-ANNUAL SUBMISSION CY 76 RCB ORCMT-301

| PROJ NO.     | TITLE + STATUS  | AUTHORIZED (8000) | CONTRACT VALUES (8000) | EXPENDED LABOR AND MATERIAL (8000) | ORIGINAL PROJECTED COMPLETE DATE | PRESIDENT PROJECTED COMPLETE DATE |
|--------------|---|-------------------|------------------------|------------------------------------|----------------------------------|-----------------------------------|
| 5 76 4114    | METHODS TO MINIMIZE ENVIRONMENTAL CONTAMINATION<br>SEE PROJECT 5 77 4114.   | 5,200.0           | 1,447.9                | 1,793.1                            |                                  | NOV 79                            |
| 5 77 4114    | DEVELOPMENT OF POLLUTION ABATEMENT TECHNOLOGY<br>SEE FOLLOWING INDIVIDUAL TASKS FOR WORK STATUS.  | 1,007.2           | 105.6                  | 562.0                              | NOV 79                           | JUN 79                            |
| 5 77 4114E02 | ECOLOGICAL SURVEY OF DARCOM INSTALLATIONS<br>DPG COMPLETED THE ECOLOGICAL SURVEYS AT TEAD AND RMA. A DRAFT TECH RPT OF THE SURVEY AT PBA WAS SUBMITTED FOR PUBLICATION. ALL ANALYSES WERE COMPLETED.  | 0.0               | 0.0                    | 0.0                                | NOV 77                           | AUG 78                            |
| 5 77 4114E06 | MONITORING TOXIC EFFLUENTS WITH BIO SENSORS<br>A CONTRACTOR TECH RPT "THE CONSTRUCTION, INSTALLATION, AND ANALYSIS OF A FISH MONITORING SYSTEM FOR INDUSTRIAL WASTES" WAS CLEARED FOR PUBLICATION. THE BIOMONITORING TRAILER WAS MOVED TO RAAP AND INSTALLED IN THE ROLLED POWDER MANUFACTURING AREA.             | 104.6             | 50.6                   | 45.0                               | APR 79                           | DEC 78                            |
| 5 77 4114E08 | EDGEWOOD ARSENAL WASTEWATER TREATMENT<br>THE WATER CHARACTERIZATION DATA TO DATE WAS VALIDATED FOR USE ON THE MCA FY80 EDGEWOOD MAIN TREATMENT PLANT. THE BACKGROUND DATA WAS ALSO EVALUATED AND FOUND TO REPRESENT HIGH CONCNS OF MERCURY, TOTAL PHOSPHATE, NITRATE AND ZINC FAIRLY FREQUENTLY.                  | 144.6             | 0.0                    | 84.0                               | JUN 77                           | JUN 79                            |
| 5 77 4114F01 | IDENT + CONTROL OF POLLUTION - PRESENT REGRTS<br>CONSIDERABLE ASSISTANCE HAS BEEN PROVIDED TO MISS AAP. DESIGN OF THE MISS AAP FACILITY ENVIRONMENTAL SYSTEM WAS REVIEWED. CHANGES IN DESIGN WERE MADE AS A RESULT OF THESE REVIEWS. A WASTEWATER INVENTORY AT MISS AAP WAS COMPILED.                             | 59.0              | 0.0                    | 5.0                                | SEP 77                           | JUN 79                            |
| 5 77 4114F02 | CONTROL OF POLLUTION GENERATED BY SURFACE TREAT LINES<br>A CONTRACT WAS AWARDED FOR THE EVALUATION OF ULTRAFILTRATION AS A MEANS OF TREATING THE ALKALINE CLEANER STAGE OF THE PHOSPHATE SYSTEM AT SCRANTON AAP. RESULTS HAVE BEEN EXCELLENT. THE LIFE OF THE ALKALINE CLEANER CAN BE EXTENDED FROM 1 WK TO 6WKS. | 0.0               | 0.0                    | 0.0                                | FEB 77                           | SEP 78                            |
| 5 77 4114F04 | IMPROVED TREATMENT FOR PRIMER MIX PLANT<br>SAMPLES WERE TAKEN FROM AN OBSERVATION WELL TO DETERMINE IF THE UNCONFINED GROUND WATER AQUIFER HAD BEEN CONTAMINATED BY PRIMER WASTES DUMPED INTO LEACH BEDS. AEA ANALYSIS OF THE SAMPLES SHOWED NO CONTAMINATION AT THE TC AAP LOCATION.                             | 0.0               | 0.0                    | 0.0                                | APR 77                           | APR 77                            |
| 5 77 4114F10 | PYROTECHNIC WASTE DISPOSAL<br>THE TOOLE DEACTIVATION FURNACE WAS INSTALLED AND DEBURRED. A MODIFIED CONTROL SYSTEM IS REQUIRED TO PROVIDE QUICKER RESPONSE TIME TO TEMPERATURE SPIKES. MERCURY COATED LOVE AMMUNITION IS BEING COLLECTED AND STORED UNTIL THE FILTER SYSTEM IS MODIFIED                           | 0.0               | 0.0                    | 0.0                                | DEC 76                           | DEC 78                            |



SUMMARY PROJECT STATUS REPORT  
MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
1ST SEMIANNUAL SUBMISSION CY 76 RCS DRGHT-301

| PROJ NO.     | TITLE + STATUS  | AUTHORIZED<br>(\$000) | CONTRACT<br>VALUES<br>(\$000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(\$000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESNT<br>PROJECTED<br>COMPLETE<br>DATE |
|--------------|---|-----------------------|-------------------------------|---|---|---|
| 5 77 4114F12 | POLLUTION CONTROL FOR SCAMP<br>THE CONTRACTOR HAS RECEIVED ALL DRAWINGS AND EFFLUENT SAMPLES REQUESTED FROM LCAAP AND IS PREPARING THE DETAILED FINAL DESIGN. ADDITIONAL TESTING WAS REQUIRED TO DETERMINE WHAT SUPPLEMENTAL REMOVAL TECHNIQUES WILL BE NECESSARY TO KEEP OIL CONTENT DOWN                | 100.0                 | 50.0                          | 16.1  | MAR 76                                    | APR 76                                  |
| 5 77 4114F13 | MONITOR + CONTROL OF POLLUTANTS<br>A HYDROCARBON ANALYZER/RECORDER AND A TRANSMISSIONMETER WERE RECEIVED BY SCRANTON AAP. THE FORMER WILL BE INSTALLED ADJACENT TO A PAINT-SPRAY BOOTH. THE LATTER WILL BE INSTALLED ON A SHORESTACK OF A FORGING FURNACE TO MONITOR THE OPACITY OF THE GAS.              | 0.0                   | 0.0                           | 0.0   | JUN 77                                    | JUN 77                                  |
| 5 77 4114F14 | ELIM OF AIR POLLUTION FROM METAL PARTS MFG<br>A CHARGED DROPLET SCRUBBER PILOT UNIT WAS LEASED AND EVALUATED FOR ITS ABILITY TO REMOVE OIL MISTS AND PARTICULATE MATTER FROM THE STACK GASES OF A HOT FORGING LINE. THE TEST DATA SHOWED VERY GOOD REMOVAL OF PARTICULATES LARGER THAN .3 MICRONS.        | 0.0                   | 0.0                           | 0.0   | JUN 77                                    | JAN 78                                  |
| 5 77 4114F15 | DISPOSAL OF MERCURY FROM STRESS CRACK TESTS<br>A MERCURY PYROLYSIS SYSTEM WAS INSTALLED AT LCAAP TO REMOVE MERCURY FROM BRASS CARTRIDGE CASES. MOST PRACTICAL AND ECONOMIC METHOD FOR REMOVING MERCURY FROM LIVE AMMO WERE EXPLORED. A PILOT LINE TO HANDLE MERCURY FROM STRESS CRACKING TESTS WAS BUILT. | 0.0                   | 0.0                           | 0.0   | DEC 76                                    | DEC 78                                  |
| 5 77 4114P01 | PROGRAM CONTROL, COORDINATION AND SUPPORT<br>SAMPLING OF EMISSIONS FROM THE SAR, APR, AND DSN HAVE BEEN ACCOMPLISHED BY VAAP. THE EVALUATION OF ANTHRACILIT AS A PRETREATMENT MEDIA FOR REMOVAL OF SUSPENDED SOLIDS AND WAXES FROM PINKWATER IS CONTINUING AT THE NAAP.                                   | 176.0                 | 20.0                          | 7.2   | SEP 76                                    | SEP 78                                  |
| 5 77 4114P04 | NOX ABATEMENT METHODS<br>THE FINAL OPERATING TEST OF THE MDL SIEVE WAS MADE. THE LEVEL OF NOX IN THE INFLUENT STREAM AVERAGED 1320 PPM BUT WAS REDUCED TO AN AVERAGE VALUE OF 33 PPM IN THE EFFLUENT STREAM. NAAP IS PREPARING A FINAL OPERATING REPORT. SEE TASK P33.                                    | 0.0                   | 0.0                           | 0.0   | NOV 79                                    | NOV 79                                  |
| 5 77 4114P06 | PROPELLANT AND EXPLOSIVE WASTE INCINERATION<br>THE ANALYSIS OF THE FLUIDIZED BED INCINERATOR AT PA WAS COMPLETED AND THE FINAL REPORT IS BEING REVIEWED. THE 200 PPM TARGET FOR NOX EMISSIONS WAS MET BY THE MAJORITY OF THE TEST RUNS. THE ROTARY KILN INCEN AT NAAP HAS BEEN MODIFIED TO RECYCLE XHAUST | 0.0                   | 0.0                           | 0.0   | JUN 77                                    | JUN 78                                  |
| 5 77 4114P08 | DISPOSAL OF RED WATER FROM TNT PURIFICATION<br>FURTHER STUDY OF THE AQUEOUS CARBONATE PROCESS WAS CONCLUDED. STUDIES OF THE TAMPELLA RECOVERY PROCESS WERE POSTPONED. EMPHASIS WAS PLACED ON EVALUATING THE SONOCO SULFITE RECOVERY PROCESS WHICH BURNS RED WATER AND COAL OR OIL IN A ROTARY KILN.       | 0.0                   | 0.0                           | 0.0   | JUN 77                                    | SEP 78                                  |

SUMMARY PROJECT STATUS REPORT  
1ST SEMIANNUAL SUBMISSION CY 78 RCB DRCHT-301

| PROJ NO.     | TITLE + STATUS   | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|--------------|--|--------------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| 5 77 411UP10 | DISPOSAL OF WASTES FROM PROPELLANT MFG<br>A FINAL RPT ON THE REUSE OF SCRAP PROP IS BEING PREPARED. AT BAAP, AN ULTRAFILTRATION UNIT AND A REVERSE OSMOSIS UNIT HAVE BEEN INSTALLED AND TESTED WITH CLEAR WATER. A LIQUOR SAMPLE TEST HAS BEEN RUN AND THE RESULTS ARE BEING EVALUATED.                | 0.0                | 0.0                     | 0.0                                 | MAR 79                           | JUN 79                          |
| 5 77 411UP12 | ELIMINATION OF ORGANIC WASTES SUCH AS SOLVENT<br>A ROUGH DRAFT OF THE FINAL REPORT FOR PHASE 2 OF THIS PROJECT WAS COMPLETED.  | 0.0                | 0.0                     | 0.0                                 | AUG 77                           | OCT 78                          |
| 5 77 411UP16 | PROCESS WATER MANAGEMENT AT GOCO PLANTS<br>STORAGE AND STABILITY TESTS OF PROPELLANT BATCHES MADE FROM MIXED ACID RECYCLE NC HAVE BEEN COMPLETED. COMPARISONS WITH CONVENTIONALLY MFGED NC SHOWED EQUIVALENT STABILITY AND STORAGE LIFE, BASED ON VACUUM STABILITY, CONTINUOUS HEAT AND STAB/STOR TEST | 377.2              | 72.1                    | 296.7                               | NOV 77                           | SEP 78                          |
| 5 77 411UP19 | METHODS + EPT TO MONITOR AND CONTROL POLLUTANTS<br>THE EVALUATION OF THE HYDROCARBON INFRARED ANALYZER PROVIDED ACCEPTABLE MEASUREMENTS OF SOLVENT VAPOR IN THE EFFLUENT GAS STREAMS. THE NG MONITOR IS BEING REPAIRED. THE REPAIR OF THE SULFIDE MONITOR HAS BEEN COMPLETED.                          | 0.0                | 0.0                     | 0.0                                 | JAN 79                           | MAR 80                          |
| 5 77 411UP27 | SOLID WASTE SOIL DISPOSAL TECHNIQUES<br>THE FABRICATION OF TWO SEALED, HEATED TRANSPARENT HOUSINGS FOR THE COMPOSTERS WAS COMPLETED. COMPOSTING MATERIAL FOR THE STUDY HAS BEEN OBTAINED. TNT COMPOSTING WORK AT NMSC WAS TEMPORARILY SUSPENDED TO REEVALUATE THE PROGRAM AND PLAN FUTURE WORK.        | 0.0                | 0.0                     | 0.0                                 | MAR 78                           | DEC 79                          |
| 5 77 411UP31 | FREEZE TECHNOLOGY FOR WATER POLLUTION<br>REVIEW AND TECHNICAL EDITING TO INCLUDE METRIC EQUIVALENTS IS IN PROGRESS ON THE FINAL CONTRACTOR REPORT PRIOR TO PUBLICATION.  | 0.0                | 0.0                     | 0.0                                 | SEP 77                           | SEP 78                          |
| 5 77 411UP33 | REMOVAL OF NOX AND TNH FROM NITRATION FUMES<br>THE DESIGN OF THE SYSTEM USING SULFURIC ACID SCRUBBING FOR NOX ABATEMENT FOR TNT MANUFACTURING AT RAAP HAS BEEN COMPLETED AND FINAL ENGINEERING DRAWINGS ARE BEING PREPARED. A CONTRACT SOLICITATION PACKAGE IS BEING COMPLETED. SEE TASK #4.           | 0.0                | 0.0                     | 0.0                                 | NOV 79                           | NOV 79                          |
| 5 77 411UP34 | OXIDATION OF NITROBODIES<br>THE REMOVAL OF DISSOLVED TNT IN WASTEWATER USING SOLVENT EXTRACTION (WHITE OIL). SAMPLES OF WASTEWATER CONTAINING DIFFERENT LEVELS OF TNT WERE SCANNED IN THE UV REGION AT TWO TEMPERATURE LEVELS AND THE SCANS WERE FOUND TO BE IDENTICAL.                                | 176.5              | 13.5                    | 196.9                               | MAY 78                           | AUG 78                          |

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
SUMMARY PROJECT STATUS REPORT  
1ST SEMIANNUAL SUBMISSION CY 78 RCB DRCMT-301

| PROJ NO.  | TITLE + STATUS  | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|-----------|---|--------------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| 5 76 4122 | PRODUCTION LINE MODERNIZATION FOR CBU WEAPONS<br>TOP COMPLETED FOR CBU 52 PRODUCTION LINES AT MILAN AAP AND FOR CBU 58/71 PRODUCTION LINES AT KANSAS AAP. CONCEPT COMPLETED FOR CBU 58/71 PRODUCTION LINES AT KANSAS AAP.   | 721.0              | 0.0                     | 477.0                               | MAR 77                           | SEP 78                          |
| 5 75 4136 | DEVELOPMENT OF A GENERALIZED MATH MODEL<br>SEE PROJECT 5 76 4136 FOR A DESCRIPTION OF WORK.   | 283.0              | 86.0                    | 197.0                               | JAN 76                           | DEC 78                          |
| 5 76 4136 | DEVELOPMENT OF A GENERALIZED MATH MODEL<br>A COMPUTERIZED RAM DATA BANK IS BEING MODIFIED AND EXPANDED. A CONTRACT IS BEING LET TO EXPAND THE PREVIOUS GENERALIZED MODEL TO COVER NEW MISSION ITEMS AND RAM ENGINEERING.  | 150.0              | 0.0                     | 98.0                                | JUN 77                           | MAY 79                          |
| 5 77 4139 | *APPL OF RADAR TO BALLISTIC ACCEPT TEST OF AMMO.<br>FINAL REPORT FOR FY77 EFFORT HAS BEEN SUBMITTED. FOR STATUS OF PROJECT 4139 SEE 5 78 4139 BELOW.  | 190.0              | 190.0                   | 0.0                                 | DEC 77                           | JUL 78                          |
| 5 78 4139 | APPLICATION OF RADAR TO BALLISTIC ACCEPTANCE TEST OF AMMO<br>ANTENNA PEDestal + SERVO CONTROL BOX HAVE BEEN MOUNTED + CHECKED. A SPECIAL PURPOSE PROCESSOR HAS BEEN TESTED. THE PHASE-FREQUENCY SCAN ANTENNA WAS INSTALLED. SYSTEM INTEGRATION AND CHECKOUT HAS STARTED. SOFTWARE IS 85% COMPLETE.                        | 1,500.0            | 881.2                   | 63.2                                | FEB 79                           | FEB 79                          |
| 5 70 4147 | COMPUTER CONTROL APPLICATION TO CONTINUOUS TNT MANUFACTURE<br>PREPARATIONS FOR TESTING THE UPDATED BATCH LOGIC PROGRAM CONTINUED. PLANS WERE MADE TO TEST THE PROGRAM ON LINE 1 USING INERT MATERIAL AND SIMULATION EQUIPMENT TO CREATE REQUIRED SIGNALS FROM THE PROCESS. CONTINUED PREPARATION OF TECHNICAL REPORT.     | 1,252.0            | 1,217.0                 | 35.0                                | MAY 73                           | AUG 78                          |
| 5 74 4147 | COMPUTER CONTROL APPLICATION TO CONTINUOUS TNT MANUFACTURE<br>DETAILED SYSTEM DESIGN AND HARDWARE FABRICATION FOR THE ANALOG CONTROL SYSTEM AT RAAP WAS INITIATED. DESIGN REVIEWS WERE HELD WITH FOXBORO. ABOUT 50% OF THE FIELD EQUIPMENT WAS DELIVERED TO RAAP. FABRICATION AND ASSEMBLY OF CNTRL RM EQUIP WAS STARTED. | 795.0              | 765.0                   | 30.0                                | NOV 75                           | NOV 79                          |
| 5 78 4148 | REDUCED HEIGHT FORGING FOR THE 8 INCH MOTOR BODY, XM650<br>BECAUSE OF A DELAY IN FUNDING NO WORK HAS BEEN ACCOMPLISHED.   | 80.0               | 79.0                    | 0.0                                 | NOV 78                           | NOV 78                          |
| 5 78 4149 | LOADING OF 30MM ADEN/DEFA HEDP AMMUNITION<br>THE PROCUREMENT REQUEST HAS BEEN SUBMITTED TO THE PROCUREMENT DIRECTORATE.   | 500.0              | 0.0                     | 0.0                                 | MAY 79                           | MAY 79                          |
| 5 78 4150 | NEW MANUFACTURING PROCESSES FOR 3AHS AMMUNITION<br>ASSEMBLY PLANS FOR BULLETS AND CARTRIDGES HAVE BEEN DISCUSSED WITH PROSPECTIVE BIDDERS AND LCAAP. A PRELIMINARY COST ESTIMATE FOR ALTERNATE PENETRATOR MANUFACTURING PROCESSES WAS DEVELOPED.  | 50.0               | 0.0                     | 50.0                                | SEP 80                           | SEP 80                          |

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
S U M M A R Y P R O J E C T S T A T U S R E P O R T  
1ST SEMIANNUAL SUBMISSION CY 76 RCB DRCHT-301

| PROJ NO.  | TITLE + STATUS  | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|-----------|---|--------------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| 5 78 4133 | INERTIA HELDER FOR THE M509 AND M483 PROJECTILES<br>SCOPE OF WORK HAS BEEN PREPARED, THE PROCUREMENT PACKAGE IS CURRENTLY BEING COMPLETED.  | 350.0              | 0.0                     | 0.0                                 | AUG 80                           | AUG 80                          |
| 5 72 4162 | *AUTO LINE FOR THE MELT-POUR PROCESSING OF HIGH EXPLOSIVES<br>THE FINAL REPORT HAS BEEN PREPARED AND SUBMITTED.   | 2,045.9            | 445.9                   | 1,600.0                             | JUN 73                           | JUL 78                          |
| 5 74 4162 | *AUTO LINE FOR THE MELT-POUR PROCESSING OF HIGH EXPLOSIVES<br>THE FINAL REPORT HAS BEEN PREPARED AND SUBMITTED.   | 1,759.4            | 366.1                   | 1,393.3                             | DEC 74                           | JUL 78                          |
| 5 77 4165 | PROT FAC FOR HHX RECOVERY FROM RDX/HHX ADMIXTURES<br>FINAL ENGINEERING REPORT HAS BEEN ISSUED BY HAAP ON 1 FEB 78.<br>ARRADCOM HAS PREPARED A POSITION PAPER FOR REVIEW. REMAINING FUNDS WILL BE USED BY HAAP TO DECONTAMINATE BLOCS D-5 AND E-4.   | 400.0              | 400.0                   | 0.0                                 | JAN 78                           | AUG 78                          |
| 5 74 4165 | *PROTOTYPE FACILITY FOR RECOVERY OF HHX FROM RDX/HHX ADMIX<br>THIS IS THE FINAL REPORT. SIMMER TANKS, SLURRY PUMPS AND CONTROL PANEL WERE INSTALLED IN BLOC D-5 AT HAAP. CYCLOPES, HOLD-UP TANKS AND PUMPS WERE INSTALLED IN BLOC E-4 AT HAAP.  | 1,196.0            | 1,080.0                 | 116.0                               | DEC 75                           | JUL 78                          |
| 5 75 4165 | *PROTOTYPE FACILITY FOR RECOVERY OF HHX FROM RDX/HHX ADMIX<br>THIS IS THE FINAL REPORT. EQUIPMENT INSTALLED BY PRIOR YEAR PROJECT IN BLOCS D-5 AND E-4 AT HAAP WERE WATER TESTED AND CALIBRATED. TESTING AND DEBUGGING OF THE PILOT PLANT WAS INITIATED.  | 495.0              | 450.0                   | 45.0                                | JUL 77                           | JUL 78                          |
| 5 76 4165 | *PROTOTYPE FACILITY FOR RECOVERY OF HHX FROM RDX/HHX ADMIX<br>THIS IS THE FINAL REPORT. DEBUGGING OF THE PILOT PLANT WAS COMPLETED AND A PARAMETER STUDY TO OPTIMIZE OPERATION RUN. MODIFICATIONS WERE MADE IN THE CYCLOPES. AMOUNT OF HHX RECOVERED VARIED FROM 34 TO 58 LBS AND YIELD VARIED FROM 32-64 PER CENT OF HHX | 475.0              | 475.0                   | 0.0                                 | JAN 78                           | JUL 78                          |
| 5 74 4169 | *ESTABLISHMENT OF IMPROV PROC TO MANUFACTURE NITROQUANTIDINE<br>A COLORIMETRIC METHOD OF ANALYSIS OFR GUANIDINE WAS DEFINED WHICH GIVES BOTH PERCENTAGE GUANIDINIUM ION AND NITROQUANTIDINE IN THE SAMPLE. A METHOD FOR ON-STREAM PARTICLE SIZE ANALYSIS OF FEED TO THE CALCIUM CYANAMIDE KILN WAS DEFINED ALSO.          | 405.0              | 43.6                    | 359.4                               | NOV 74                           | APR 78                          |
| 5 74 4201 | SAFETY ENGINEERING IN SUPPORT OF AMMUNITION PLANTS.<br>EFFECTS OF SHIELDED TOTE BINS PUBLISHED. WATER DELUGE EXTINGUISHMENT AND MI DUST EXPLOSTABILITY REPORTS SUBMITTED FOR PUB. BLAST LOADING FROM BLAST LEAKAGE REPT BEING REVIEWED. THE LATTER DELAYED BY MATERIAL SHORTAGES FROM NON ARRADCOM ACQYS.                 | 1,237.0            | 973.5                   | 363.5                               | JUN 75                           | SEP 78                          |



S U M M A R Y P R O J E C T S T A T U S R E P O R T  
1ST SEMIANNUAL SUBMISSION CY 78 HCS DRGNT-301

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM

| PROJ NO.  | TITLE + STATUS  | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|-----------|---|--------------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| 5 71 4202 | *PROTO EQ FOR CONT, AUTO PON OF SOLVENT TYPE MULTI-BASE PROP PROCESSING OF M26 ON DEHY SYSTEM CONTINUED. 20 M26E1 RUNS WERE MADE THRU PRE-MIXER + MIXER. WORK ON CUTTING M26E1 RESULTED IN POOR QUALITY GRANULES. CORRECTIVE ACTION IS BEING TAKEN. DEMY, PRE-MIXER, MIXER, EXTRUDER + CUTTER WERE CONVERTED F/M30A1. | 282.0              | 219.0                   | 63.0                                | DEC 76                           | JUL 78                          |
| 5 73 4202 | *PROTO EQ F/CONT AUTO PROD OF SOLVENT- TYPE MULTI-BASE PROP THIS PROJECT IS COMPLETE. THE FINAL REPORT WAS PREPARED.  | 1,005.0            | 945.0                   | 60.0                                | DEC 74                           | JUL 78                          |
| 5 75 4202 | *PROTO EQ F/CONT AUTO PROD OF SOLVENT- TYPE MULTI-BASE PROP M30 NC PRODUCTION RUNS THRU THE THERMAL DEHY WERE COMPLETED. 74 M30 RUNS WERE MADE ON THE PREMIXER. WORK WAS CONTINUED ON ELIMINATING POROSITY IN THE MIXER PRODUCT. 1100 LBS OF M30 PROP WAS SUCCESSFULLY TESTED IN GUN FIRINGS AND CLOSED BOMB TESTS.   | 342.0              | 272.0                   | 70.0                                | MAR 76                           | JUL 78                          |
| 5 76 4202 | *PROTO EQ F/CONT AUTO PROD OF SOLVENT- TYPE MULTI-BASE PROP WORK WAS STARTED IN PROCESSING M26 NC THRU THE THERMAL DEHY. 29 RUNS OF M26E1 PROP WAS MADE THRU THE PRE-MIXER AND MIXER. INITIAL WORK DONE ON THIS PROJECT NOW IS BALLISTIC TESTING AND GUN FIRINGS OF M30A1 PROPELLANT AND WRITING OF THE FINAL REPORT. | 140.0              | 100.0                   | 40.0                                | DEC 76                           | JUL 78                          |
| 5 77 4202 | *PROTO EQ F/CONT AUTO PROD OF SOLVENT- TYPE MULTI-BASE PROP BECAUSE OF NG EXPLOSION AT HAAP, WORK ON CANBL PROTOTYPE HAD TO BE STOPPED. NG RESTORATION WILL NOT BE UNTIL APR, 1980. THE ONLY WORK DONE ON THIS PROJECT NOW IS BALLISTIC TESTING AND GUN FIRINGS OF M30A1 PROPELLANT AND WRITING OF THE FINAL REPORT.  | 505.0              | 318.0                   | 95.6                                | MAR 78                           | JAN 79                          |
| 5 71 4205 | *PROC SPENT ACID FR RDX/HMX FR RECOV OF EXPLOSIVE + ACID THIS IS THE FINAL REPORT. AMMONIA AND CALCIUM HYDROXIDE CAN REPLACE SODIUM HYDROXIDE AS NEUTRALIZER AND CAUSTICIZER. GRANULAR ACTIVATED CARBON CAN BE USED TO ADSORB RESIDUAL EXPLOSIVES FROM PROCESS. N-PROPYL ACETATE IS EFFECTIVE FOR RDX/HMX EXTRACT.    | 110.0              | 90.0                    | 20.0                                | DEC 72                           | JUL 78                          |
| 5 74 4205 | *PROC SPENT ACID FR RDX/HMX FR RECOV OF EXPLOSIVE + ACID THIS IS THE FINAL REPORT. INSTALLATION OF A HEATING AND CIRCULATING LOOP HAS RESULTED IN REDUCTION OF EXPLOSIVE PRECIPITATION IN THE PRIMARY EVAPORATOR FEED TANK THEREBY REDUCING THE EXPLOSIVE LOAD LIMIT IN THE HAAP SPENT ACID AREA (8=LINE)             | 70.7               | 40.7                    | 30.0                                | JUN 75                           | JUL 78                          |
| 5 76 4211 | MOD OF PROCESS CONTROL OF EXPLOSIVE COMPOSITIONS CONTRACT FOR DESIGN, CONSTRUCTION AND TESTING OF ON-LINE RDX/TNT ANALYZER AWARDED TO SCIENCE APPLICATIONS. PRELIMINARY DESIGN REVIEW CONDUCTED IN APRIL. REVIEW OF ORGANIC SIMULANTS CONDUCTED AND CONCEPT FOR CALIBRATION OF SIMULANTS STUDIED.                     | 175.0              | 1.5                     | 161.0                               | MAY 77                           | DEC 78                          |

SUMMARY PROJECT STATUS REPORT  
MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
1ST SEMI-ANNUAL SUBMISSION CY 78 RCB DSCMT-301

| PROJ NO.    | TITLE + STATUS   | AUTHORIZED<br>(\$000) | CONTRACT<br>VALUES<br>(\$000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(\$000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESNT<br>PROJECTED<br>COMPLETE<br>DATE |
|-------------|--|-----------------------|-------------------------------|---|---|---|
| 5 77 4211   | MOD OF PROCESS CONTROL OF EXPLOSIVE COMPOSITIONS<br>DESIGN DRAWINGS BY CONTRACTOR CONTAINING REVISION ON SAMPLING<br>CHAMBER, DETECTOR, SOURCE HOLDER GEOMETRY WERE COMPLETED AND<br>SUBMITTED TO ARADCOM.   | 267.0                 | 99.5                          | 57.9  | AUG 78                                    | DEC 79                                  |
| 5 78 4214   | POLLUTION ENGINEERING FOR 1983-85 REQUIREMENTS<br>SEE FOLLOWING INDIVIDUAL TASKS FOR WORK STATUS.  | 1,180.0               | 460.0                         | 113.5   | SEP 79                                    | JUL 79                                  |
| 5 78 4214P1 | TECHNOLOGY REQUIREMENTS<br>A HIG WAS HELD AT LSAP TO DETERMINE THE POLLUTION ABATEMENT<br>PROBLEM AT THE DETONATOR LINE FACILITY. LAB TESTING WAS PERFORMED<br>TO DETERMINE THE EFFICIENCY OF HEAVY METALS REMOVAL. FOUR MCA<br>PROGRAMS WERE REVIEWED FOR TECHNICAL CONTENT RELATING TO PA.                                 | 212.0                 | 0.0                           | 7.9   | SEP 79                                    | SEP 79                                  |
| 5 78 4214P2 | IN-PLANT REUSE OF POLLUTION ABATED WATERS<br>SURVEYS OF TREATED WATER CHARACTERISTICS AND WATER QUALITY<br>REQUIREMENTS AT RAAP WERE INITIATED. CONTRACT NEGOTIATIONS AT<br>HAAP HAVE BEEN COMPLETED AND FUNDING BY MID JUNE IS PLANNED.   | 378.0                 | 130.0                         | 51.6  | JUL 79                                    | JUL 79                                  |
| 5 78 4214P3 | LOW COST SYSTEM TO ABATE NITROBODDY POLLUTION<br>STUDIES HAVE BEEN CONDUCTED ON THE UV-OZONOLYSIS METHOD FOR<br>TREATMENT OF PINK WASTEWATER. THIS METHOD IS EFFECTIVE IN<br>REDUCING NITROBODDY LEVELS FROM 140-160 MG/4 TO A LEVEL LESS THAN<br>ONE MG/4.  | 354.0                 | 160.0                         | 31.9  | JUL 79                                    | JUL 79                                  |
| 5 78 4214P4 | NG-NITRATE ESTER REMOVAL BY ADSORPTION/RECYCLE<br>REVIEWED PAST WORK IN REMOVAL OF NG WITH ADSORBENTS AND THEIR<br>REGENERATION, MATERIAL VENDOR CONTACTS AND FEASIBILITY STUDY OF<br>RECOVERING THE NITRATE ESTERS AND SOLVENTS FROM THE REGENERATION<br>RESIDUES.  | 236.0                 | 150.0                         | 22.1  | JUL 78                                    | JUL 78                                  |
| 5 74 4215   | AUTO THE CONTINUOUS TNT PROD FACILITY PROCESS CONTROLS<br>INVESTIGATIONS WERE CONDUCTED TO DETERMINE THE BEST ANALYTICAL<br>COLUMNS SUITABLE FOR PERFORMING MIXED ACID ANALYSES. FLOW RATES<br>AND OPTIMUM SEPARATION OF SULFURIC AND NITRIC ACID WERE STUDIED.<br>THE SEALS IN THE ON-LINE TNT FREEZING-PT ANALYZER LEAKED. | 323.8                 | 264.6                         | 99.2  | MAY 75                                    | DEC 78                                  |
| 5 74 4223   | APPLICATION OF ULTRASONIC ENERGY TO DOUBLE-BASE PROP PROC<br>MODIFICATIONS TO THE MALFUNCTIONING FREQUENCY GENERATOR ARE<br>UNDERWAY. THIS INCLUDES AN IMPROVED UNIJUNCTION OSCILLATOR<br>CIRCUIT, THE REDESIGN AND PROVE-OUT OF THE PAIRED TRANSFORMER<br>CIRCUITRY AND THE REFINEMENT OF THE ELECTRICAL CABINET CIRCUITRY. | 397.0                 | 224.2                         | 169.8   | MAR 75                                    | OCT 78                                  |
| 5 77 4223   | APPLICATION OF ULTRASONIC ENERGY TO DOUBLE-BASE PROP PROC<br>A MORE COMPLETE SCOPE OF WORK WAS PREPARED COVERING THE MARK 43<br>PROPELLANT GRAIN MACHINING, INHIBITTING, GAUGING, LOADING AND<br>STATIC TESTING TO BE ACCOMPLISHED AT RADFORD AAP.   | 330.0                 | 47.9                          | 194.5   | SEP 78                                    | JAN 79                                  |

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
S U M M A R Y P R O J E C T S T A T U S R E P O R T  
1ST SEMI-ANNUAL SUBMISSION CY 76 RCB DRCHT-301

| PROJ NO.  | TITLE + STATUS   | AUTHO-<br>RIZED<br>(\$000) | CONTRACT<br>VALUES<br>(\$000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(\$000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|--|----------------------------|-------------------------------|---|---|--|
| 5 76 4228 | AUTOMATED BAG LOADING/CHARGE ASSEMBLY + PACKOUT=155MM/8IN<br>LINE CONTINUOUS TO BE DEBUSED. BINDING ELIMINATED IN CAROUSEL<br>TRACK, SEWING AND THREAD CUTTER MODULES WERE FABRICATED,<br>INTERFACED AND PROVEN OUT. AUTO SPEED CONTROL ON CONVEYOR<br>FINISHED. SAFETY SWITCHES AND EMERGENCY CORD ADDED. CONTROL PANEL<br>COMPLETE | 1,260.0                    | 82.0                          | 1,148.5   | JUN 76                                    | JUN 78                                   |
| 5 77 4228 | AUTOMATED BAG LOADING/CHARGE ASSEMBLY + PACKOUT=155MM/8IN<br>AUTO BAG LOADING LINE CONTINUOUS TO BE IMPROVED. INCLINE AND<br>BUFFER CONVEYOR WIDENED. PEDESTALS MADE ADJUSTABLE. AIR ACTUATED<br>INCREMENT STATION INSTALLED. PACKOUT LINE OPERATED IN AUTO MODE<br>AFTER INSTALL OF FLAGS AND AIR LOGIC CHANGES.                    | 1,400.0                    | 147.0                         | 1,200.2   | MAY 78                                    | JUN 78                                   |
| 5 78 4228 | AUTOMATED BAG LOADING/CHARGE ASSEMBLY + PACKOUT=155MM/8IN<br>FY78 9.0%. HAS NOT BEEN INITIATED.  | 795.0                      | 0.0                           | 0.0   | AUG 78                                    | AUG 78                                   |
| 5 76 4237 | CONTINUOUS TNT PROCESS ENGINEERING<br>INSTALLATION OF THE TNT PILOT PLANT PROCESS EQUIPMENT HAS<br>COMPLETED. INSULATION OF THE VESSELS AND PIPING IS ABOUT 90%<br>COMPLETE. FIELD INSTRUMENTATION WAS INSTALLED AND IS BEING<br>READY FOR WATER TESTING. DAMAGED COMPONENTS OF THE RCS ARE IN F<br>REPAIR                           | 950.0                      | 662.0                         | 287.0   | JUN 78                                    | APR 78                                   |
| 5 77 4237 | CONTINUOUS TNT PROCESS ENGINEERING<br>THE SOP FOR WATER TESTING WAS REVIEWED AND WORK COMMENCED TO<br>DEVELOP OPERATION SOPS FOR THE PROCESS. A SCOPE FOR ADDITIONAL<br>CONTRACTOR EFFORT WAS PREPARED TO COMPLETE THE PREPARATIONS FOR<br>WATER TESTING.  | 245.0                      | 8.0                           | 192.0   | FEB 78                                    | SEP 78                                   |
| 5 78 4237 | CONTINUOUS TNT PROCESS ENGINEERING<br>NO STATUS REPORTED UNDER THIS YEAR OF FUNDING. FUNDS ARE BEING<br>WITHHELD.  | 300.0                      | 0.0                           | 0.0   | FEB 79                                    | FEB 79                                   |
| 5 75 4240 | INVESTIGATION OF LOADING AMATEX-20<br>FUNDS ORIGINALLY AT LAP PLANT WERE DEOBLIGATED AND REISSUED TO<br>ARRADCOM TO FINALIZE WORK EFFORT.  | 3,270.0                    | 667.8                         | 2,588.9   | JUN 76                                    | AUG 78                                   |
| 5 76 4240 | INVESTIGATION OF LOADING AMATEX-20<br>FINAL REPORT IS BEING PREPARED ON VARIOUS AMATEX 20 PRODUCTION<br>LAYOUTS BY THE CONTRACTOR. FINAL REPORT IS BEING PREPARED ON THE<br>TOTAL PROJECT EFFORT.  | 750.0                      | 112.7                         | 634.3   | JUN 76                                    | AUG 78                                   |
| 5 77 4249 | SEPARATION OF FINE EXPLO FROM ACID, WATER SLURRIES<br>THE INSTALLATION DRAWING PACKAGE FOR THE BIRD-PANNEVIS FILTER AT<br>BLOG E-4 HAS BEEN REVISED. BIRD-PANNEVIS FILTER IS NEARLY<br>COMPLETED. COST GROWTHS IN THE PROJECT HAVE RESULTED IN MILESTONE<br>SLIPPAGES.   | 350.0                      | 280.0                         | 70.0  | DEC 77                                    | OCT 78                                   |

S U M M A R Y P R O J E C T S T A T U S R E P O R T  
MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
18T SEMIANNUAL SUBMISSION CY 76 RCS DRGMT-301

| PROJ NO.  | TITLE + STATUS  | AUTHO-<br>RIZED<br>(8000) | CONTRACT<br>VALUES<br>(8000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(8000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|---|---------------------------|------------------------------|--|---|--|
| 5 76 4249 | SEPARATION OF EXPLOSIVES FROM SPENT ACID / WATER SLURRIES<br>THERE IS A SLIPPAGE IN THE MILESTONES DUE TO COST GROWTH IN THE<br>77 EFFORT.  | 250.0                     | 220.0                        | 0.1  | DEC 76                                    | SEP 79                                   |
| 5 77 4252 | IMPROVE PRESENT PROCESSES FOR MFC RDX AND HMX<br>EVALUATION OF CRUDE ACETIC ANHYDRIDE FOR PRODUCTION OF RDX/HMX<br>WAS COMPLETED. FINAL ENGINEERING REPORT HAS BEEN ISSUED BY MAAP.   | 388.5                     | 334.9                        | 48.5   | JUN 77                                    | JUL 78                                   |
| 5 75 4252 | IMPROVE PRESENT PROCESSES FOR THE MANUFACTURE OF RDX + HMX<br>ALL EQUIPMENT FOR THE RDX/HMX PILOT PLANT HAS BEEN RECEIVED AND<br>INSTALLED AT ARADCOM. SCHEDULES WERE PREPARED FOR COMPLETING THE<br>EVALUATION OF THE USE OF REDUCED AMOUNTS OF AMMONIUM NITRATE IN<br>THE PRODUCTION OF RDX.                                  | 550.0                     | 536.4                        | 13.6   | DEC 75                                    | AUG 78                                   |
| 5 77 4252 | IMPROVE PRESENT PROCESSES FOR THE MANUFACTURE OF RDX + HMX<br>LACQUER PREPARATION STUDIES WERE PERFORMED ON USE OF N-OCTANE IN<br>LIEU OF TOLUENE FOR COMPC4. COATING DRY RDX WAS UNSUCCESSFUL FOR<br>COMPS A3. SOLVENT/HMX SOLUTIONS WITH N-OCTANE AND NAPHTHA WERE<br>SUCCESSFUL WITH A3. TWO REACTION PROMOTERS WERE FOUND.  | 884.2                     | 823.2                        | 43.5   | DEC 77                                    | OCT 79                                   |
| 5 76 4252 | IMPROVE PRESENT PROCESSES FOR THE MANUFACTURE OF RDX + HMX<br>NO WORK ACCOMPLISHED BECAUSE FY77 EFFORT SLIPPED SIX MONTHS.  | 548.0                     | 57.0                         | 0.0  | MAY 80                                    | MAY 80                                   |
| 5 74 4263 | *AUTO PILOT LINE FOR CONTROLLED COOL/PROCESSING ME LOAD PROJ<br>PROJECT EFFORT HAS BEEN COMPLETED AND FINAL REPORT SUBMITTED.   | 713.5                     | 116.3                        | 597.2  | JAN 75                                    | JUL 78                                   |
| 5 75 4263 | *AUTO PILOT LINE FOR CONTROLLED COOL/PROCESSING ME LOAD PROJ<br>PROJECT EFFORT HAS BEEN COMPLETED AND FINAL REPORT SUBMITTED.   | 1,300.0                   | 595.3                        | 704.7  | JAN 75                                    | JUL 78                                   |
| 5 76 4263 | AUTO PILOT LINE FOR CONTROLLED COOL/PROCESSING ME LOAD PROJ<br>THE GROUND LEVEL CONVEYOR SYSTEM HAS BEEN INSTALLED AND<br>INTERFACED WITH THE PLC SYSTEM. THIS SYSTEM IS UNDERGOING DEBUG<br>AND RAM TESTING. THE WATER RECIRCULATION SYSTEM AND PROJ CARRIER<br>WERE INSTALLED AND INTERFACED. PORT HEAT SHROUD WAS INSTALLED. | 1,185.0                   | 778.7                        | 359.3  | JUN 77                                    | OCT 78                                   |
| 5 77 4263 | AUTO PILOT LINE FOR CONTROLLED COOL/PROCESSING ME LOAD PROJ<br>THE PLC WAS TEMPORARILY INSTALLED TO FACILITATE TESTING. FORCED<br>AIR SYSTEM WAS INSTALLED AND INTERFACED WITH THE MPT8 PREHEAT<br>ENCLOSURE AND PLC. ALL PROJ WORK STATION MACHINES HAVE BEEN<br>INSTALLED AND ARE UNDERGOING DEBUG AND RAM TESTING.           | 900.0                     | 147.6                        | 686.0  | SEP 78                                    | OCT 78                                   |
| 5 76 4263 | AUTO PILOT LINE FOR CONTROLLED COOL/PROCESSING ME LOAD PROJ<br>SYSTEMATIC DEBUG AND TESTING OF GROUND LEVEL CONVEYOR SYSTEM,<br>TRANSFER GANTRY, CONTROLLED COOLING SYSTEM, AND SUPPORT HARDWARE<br>WAS INITIATED.  | 257.0                     | 30.0                         | 55.6   | OCT 76                                    | OCT 78                                   |



S U M M A R Y P R O J E C T S T A T U S R E P O R T  
1ST SEMIANNUAL SUBMISSION CY 76 RCS DRGNT-301

| PROJ NO.     | TITLE + STATUS  | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|--------------|---|--------------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| 5 77 4267    | CONTINUOUS PROCESS FOR GRANULAR COMPOSITION B<br>INERT TEST RUNS WERE RESCHEDULED AT NIRO ATOMIZER TO STUDY THE PRESSURE NOZZLE AND TWO FLUID NOZZLE. A WET PRILLING TECHNIQUE WAS INVESTIGATED. DROP/IMPACT TESTS WERE PERFORMED ON CAST COMP B CHARGES IMPACTING A STEEL PLATE. 31 DROPS WITH NO INCIDENT             | 500.0              | 429.3                   | 10.8                                | SEP 79                           | AUG 80                          |
| 5 76 4267    | CONTINUOUS PROCESS FOR GRANULAR COMPOSITION B<br>NO WORK ACCOMPLISHED.  | 425.0              | 171.0                   | 0.0                                 | MAR 81                           | MAR 81                          |
| 5 75 4271    | IMPROVED PROCESSES TO POLISH, DRY, AND GLAZE SLACK POWDER<br>BENCH SCALE STUDIES WERE SUCCESSFULLY COMPLETED INDICATING THAT A PILOT PLANT STUDY SHOULD BE UNDERTAKEN AS PHASE 2. POLISHING WAS ACHIEVED IN 3 MINUTES AND GLAZING IN 15 MINUTES COMPARED TO THE NORMAL 2 MINUTES FOR POLISHING AND 2-4 HRS FOR GLAZING. | 160.0              | 141.0                   | 19.0                                | DEC 75                           | JUN 78                          |
| 5 76 4271    | IMPROVED PROCESSES TO POLISH, DRY, AND GLAZE SLACK POWDER<br>PRELIMINARY DESIGN DRAWING OF THE HARPERIZER POLISHING AND GLAZING MACHINE WERE COMPLETED. A HAZ ANAL OF THE FLUIDIZED BED DRYER LACKED A CONCLUSIVE RESULT CONCERNING ELECTROSTATIC BUILDUP HOWEVER, NO SERIOUS SAFETY HAZARD IS BELIEVED TO BE PRESENT.  | 248.0              | 132.0                   | 89.0                                | APR 76                           | FEB 81                          |
| 5 76 4280    | M577 FUZE AUTOMATIC PROCESS CONTROL PROTOTYPE EQUIPMENT<br>ULTRASONICALLY STACKED COUNTER HOUSING SAMPLES HAVE BEEN PREPARED FOR TESTING. TESTING AND EVALUATION TO BE COMPLETED WITHIN THE NEXT REPORTING PERIOD. SLIPPAGES ARE ATTRIBUTED TO INCREASED SCOPE OF WORK AND UNANTICIPATED VENDOR LEAD TIMES.             | 208.0              | 147.9                   | 41.4                                | AUG 76                           | AUG 78                          |
| 5 77 4280    | M577 FUZE AUTOMATIC PROCESS CONTROL PROTOTYPE EQUIPMENT<br>THE REGULATION AND POISING MACHINES HAVE BEEN COMPLETED AND DESIGNED. ACCEPTANCE TESTING IS SCHEDULED FOR JUNE. FUZE TIMER SAMPLES ARE BEING PREPARED FOR USE IN BALLISTIC TESTS TO EVALUATE MODIFIED PARTS AND MACHINE PERFORMANCE.                         | 900.0              | 625.0                   | 32.2                                | MAR 77                           | AUG 78                          |
| 5 76 4281    | ENERGY SAVING AT ARMY AMMO PLANTS<br>SEE SUBTASKS.  | 875.0              | 203.3                   | 405.2                               | OCT 78                           | MAR 81                          |
| 5 76 4281A01 | PROCESS ENERGY INVENTORY<br>NO PROGRESS REPORTED ON SUBPROJECT 1 FOR PROCESS ENERGY INVENTORY.  | 375.0              | 125.0                   | 250.1                               | OCT 77                           | SEP 79                          |
| 5 76 4281A04 | WASTE HEAT FROM CHEMICAL REACTIONS<br>SCOPE OF WORK WRITTEN FOR RECOVERY OF WASTE HEAT FROM NITRO POACHING TUBS AT RADFORD AAF FY78 79. 2 TESTS WERE RUN WITH HEAT RECOVERY FROM FORCED AIR FAD HOUSE EA WITH 2500 LB OF SOLVENT WET M30PROP. THE RESULTS SHOW 965K SAVINGS PER YEAR AT RAAP                            | 375.0              | 212.6                   | 155.1                               | OCT 77                           | MAY 78                          |

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
SUMMARY PROJECT STATUS REPORT  
1ST SEMI-ANNUAL SUBMISSION CY 78 RCB DRCMT-301

| PROJ NO.     | TITLE + STATUS   | AUTHORIZED<br>(\$000) | CONTRACT<br>VALUES<br>(\$000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(\$000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|--------------|--|-----------------------|-------------------------------|---|---|--|
| 5 76 4261801 | PROCESS ENERGY INVENTORY FOR METAL PARTS<br>ALL 76 EVENTS COMPL INCLUDING SAAP ENERGY INVENTORY IN FEB 77.   | 60.0                  | 44.0                          | 11.1  | OCT 78                                    | JUL 78                                   |
| 5 76 4261802 | REDUCED FORGING TEMPERATURE<br>FINAL REPT FROM SAAP INDICATED FEASIBILITY OF REDUCING FORG TEMP<br>FROM 2200 TO 2000 F. PROD TESTS TO BE ACCOMPLISHED ON FOLLOWON<br>PGM.  | 65.0                  | 0.0                           | 63.0  | JUN 77                                    | JUL 78                                   |
| 5 77 4281    | ENERGY SAVING AT ARMY AMMO PLANTS<br>SEE SUBTASKS.   | 1,000.0               | 482.6                         | 195.6   | SEP 79                                    | MAR 81                                   |
| 5 77 4261A01 | PROCESS ENERGY INVENTORY<br>STEAM USE AT RAAP IS 2X THEORETICAL DUE TO AGITATION LEAKAGE AND<br>REGULATION AND IS BEING QUANTIFIED. OPEN AND FORKED AIR DRY SYS<br>BEING MONITORED AT RAAP TO QUANT EFFICIENCIES. HAAP INVENTORY<br>SHOWS POTENTIAL OF 4.7K BAY AT NOB AT NOT INCL CAP OUTLAY. | 348.0                 | 0.0                           | 224.4   | JUN 79                                    | SEP 79                                   |
| 5 77 4261A04 | WASTE HEAT FROM CHEMICAL REACTIONS<br>NO PROGRESS SHOWN FOR THIS TASK DURING FY77. 83K MAINLY SPENT ON<br>THE GRUNMAN DEMO FOR MONITORING INSTALLATION AND CHECK OUT<br>ACTIVITIES. ABOVE DATA ACCUM BY FOLLOWUP 13 SEP 78.  | 193.6                 | 69.2                          | 52.0  | AUG 79                                    | MAR 81                                   |
| 5 77 4261A08 | CAVITATIONAL REMOVAL OF EXPLOSIVES<br>1 PART OF THE 4 PART EFFORT COMPL. IAAP PILOT PLANT SITE<br>SELECTED.  | 301.2                 | 152.3                         | 77.1  | SEP 79                                    | JUL 78                                   |
| 5 77 4261801 | PROCESS ENERGY INVENTORY FOR METAL PARTS<br>FINAL REPT PUBL 10 APR 78. ALTHOUGH ALREADY REVISED THIS REPT<br>WILL BE SUBJ OF REVIEW MTG WITH AUTHORS OUR NEXT PERIOD.  | 59.0                  | 36.0                          | 6.0   | FEB 78                                    | JUL 78                                   |
| 5 77 4261802 | REDUCED FORGING TEMPERATURE<br>SCRANTON HAS PILOT TEST OF 10K PROJOS AT REDUCED FORGE TEMP OF<br>2KF. PURCH ORDERS FOR INSTRUMENTATION PLACED.   | 98.0                  | 0.0                           | 46.0  | FEB 78                                    | MAR 79                                   |
| 5 78 4281    | ENERGY SAVING AT ARMY AMMO PLANTS<br>SEE SUBTASKS.   | 1,002.0               | 0.0                           | 4.1   | MAR 80                                    | MAR 80                                   |
| 5 78 4261A01 | PROCESS ENERGY INVENTORY<br>NO PROGRESS REPORTED. FUND RECEIVED LATE. MONEY SPENT ON LIT<br>SEARCH BY LIBRARY FUNCTION.  | 177.0                 | 0.0                           | 4.1   |   | MAR 80                                   |
| 5 78 4261A04 | ENERGY RECOVERY FROM WASTE HEAT<br>IMPLEMENTATION OF A STUDY FOR NITROCELLULOSE POACHING TUB WASTE<br>HEAT RECOVERY SHOULD BEGIN RESULTING FROM THE SCOPE OF WORK<br>WRITTEN FOR RAAP IN 76.   | 326.0                 | 0.0                           | 0.0   |   | MAR 80                                   |

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
S U M M A R Y P R O J E C T S T A T U S R E P O R T  
1ST SEMIANNUAL SUBMISSION CY 76 RCB DRCMT-301

| PROJ NO.     | TITLE + STATUS   | AUTHORIZED (8000) | CONTRACT VALUES (8000) | EXPENDED LABOR AND MATERIAL (8000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|--------------|--|-------------------|------------------------|------------------------------------|----------------------------------|---------------------------------|
| 5 76 4261A05 | ENERGY RECOVERY FROM WOOD WASTE<br>SIX CONTRACTORS RESPONSES BEING FINALLY EVALUATED FOR AWARD OF<br>CONTRACT TO STUDY USE OF WOOD WASTE AS FUEL SOURCE.   | 75.0              | 75.0                   | 0.0                                |                                  | MAR 79                          |
| 5 76 4261A06 | CAVITATIONAL REMOVAL OF EXPLOSIVES<br>NO FY76 PROGRESS IS SHOWN IN THIS REPORT. FUNDS RECEIVED LATE<br>CAUSING DELAY.  | 295.0             | 207.0                  | 0.0                                |                                  | JAN 80                          |
| 5 76 4261B01 | PROCESS ENERGY INVENTORY FOR METAL PARTS<br>REVIEW OF PREVIOUSLY REVISED FINAL REPORT IS ONLY PROGRESS<br>SCHEDULED.   | 72.0              | 80.0                   | 3.7                                |                                  | OCT 78                          |
| 5 76 4261B04 | WASTE HEAT RECOVERY<br>88A SELECTED A CONTRACTOR. REPORT DOESN'T STATE THAT CONTRACT LET. A<br>MEETING WAS REQUESTED BETWEEN ARMY AND CONTRACTOR. NO DATES GIVEN<br>AND CONTRACTOR NOT IDENTIFIED. PER 5 SEP INPUT CONTRACT TO AMAP<br>LET ON 26 JUL 78.   | 117.0             | 78.6                   | 38.0                               |                                  | FEB 79                          |
| 5 77 4265    | TNT EQUIVALENCY TESTING FOR SAFETY ENGINEERING<br>FINAL REPORT ON TESTING RESULTS OF SMALL AND LARGE SCALE TESTS ON<br>M-5 WAS PUBLISHED.  | 81.0              | 0.0                    | 81.0                               | NOV 77                           | JUL 78                          |
| 5 76 4265    | TNT EQUAL TESTING IN SUPPORT OF SAFETY ENGINEERING FOR AMMO PLANTS<br>FINAL REPORT ON TNT EQUIVALENCY OF COMP AS COMPLETE. PRELIMINARY<br>REPORT ON TNT EQUIVALENCY OF LARGE SCALE TESTS OF IN-PROCESS<br>NITROBODIES HAS BEEN SUBMITTED FOR SAFETY COMMENTS.                                    | 325.0             | 130.3                  | 193.4                              | FEB 77                           | JUL 78                          |
| 5 77 4265    | TNT EQUIVALENCY TESTING FOR SAFETY ENGINEERING.<br>TESTS WERE CONDUCTED ON BALL POWDER, BENITE, M-6 PROPELLANT, R264<br>TRACER COMPOSITION AND 1860 AND 1550 IGNITER COMPOSITIONS. TEST<br>RESULTS ARE BEING COMPUTED FOR INCORPORATION INTO A TEST REPORT.                                      | 360.0             | 67.9                   | 256.5                              | APR 76                           | JUL 78                          |
| 5 76 4265    | TNT EQUIVALENCY TESTING FOR SAFETY ENGINEERING<br>TEST PLANS HAVE BEEN SUBMITTED AND ACCEPTED FOR DARCOM SAFETY<br>CONCURRENCE ON COMP C-4 AND NITROCELLULOSE. TEST PLANS WILL BE<br>DELAYED FOR LX-14, OCTOL 75/25 AND COMP A-3 SINCE HAZARD<br>CLASSIFICATION STUDIES HAVE NOT BEEN CONDUCTED. | 47.0              | 0.0                    | 0.0                                | JUL 79                           | JUL 79                          |
| 5 77 4266    | *EXPLOSIVE SAFE SEPARATION AND SENSITIVITY CRITERIA<br>NO ACTION ON INDIVIDUAL TEST PROGRAMS AS TOTAL FUNDING WAS<br>UTILIZED FOR MONITORING AND COORDINATING PROGRAM EFFORTS.   | 160.0             | 0.0                    | 139.3                              | JAN 77                           | JUL 78                          |
| 5 76 4266    | *EXPLOSIVE IN PLANT SAFE SEPARATION AND SENSITIVITY CRITERIA<br>ALL 9 FINAL TASK REPORTS WERE COMPLETED.   | 979.0             | 167.1                  | 400.5                              | DEC 76                           | JUL 78                          |

SUMMARY PROJECT STATUS REPORT  
1ST SEMIANNUAL SUBMISSION CY 78 RCS DRCHT-301

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM

| PROJ NO.  | TITLE + STATUS   | AUTHORIZED<br>(8000) | CONTRACT<br>VALUES<br>(8000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(8000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|--|----------------------|------------------------------|--|---|--|
| 5 77 4280 | EXPLOSIVE SAFE SEPARATION AND SENSITIVITY CRITERIA<br>SINGLE MS49 T8TG COMPL, CSU T8TG STARTED, COMP AS T8TG COMPL<br>FINAL REPT IN REVIEW, COMP AT FINAL REPT BEING PUBLISHED, COMP 8<br>RISER SCRAP FINAL REPT PUBLISHED DURING APR 78.  | 600.0                | 337.8                        | 185.4  | OCT 78                                    | OCT 78                                   |
| 5 78 4280 | EXPLOSIVE SAFE SEPARATION AND SENSITIVITY CRITERIA<br>155MM M883 TEST UNDERWAY AT YPG, 155MM MS49 SHIELD AND PALLET<br>TEST CONTINUING, SEPARATION DATA, ON M42 GRENADE INDIVIDUAL TRAYS<br>AND WITH 12 TRAYS COLLECTED, PRIMARY AND SECONDARY FRAG IMPACT<br>TEST CONTRACTS BOTH INTO 120 DAY ARADCOM PROCUREMENT CYCLES              | 826.0                | 0.0                          | 0.0  | FEB 79                                    | FEB 79                                   |
| 5 77 4289 | HAZARD CLASSIFICATION OF PROPELLANTS AND EXPLOSIVES<br>TESTS WERE CONDUCTED WITH MULTI PERP PROPELLANT IN ONE-THIRD<br>SCALE MULTI-BASE DRYER, RESULTS INDICATE THAT A MULTI-BASE DRYER<br>WITH VENT RATIO BELOW 650 CAN BE CLASSIFIED AS CL-2 WHEN DRYING<br>M26 E1 PROPELLANT.   | 65.0                 | 13.8                         | 51.2   | APR 78                                    | JUL 78                                   |
| 5 76 4289 | STUDIES OF HAZARD CLASSIFICATION OF EXPLOSIVES AND PROPELLANT<br>WORK HAS BEEN COMPLETED, TECHNICAL REPORT HAS BEEN ISSUED.  | 250.0                | 196.0                        | 54.0   | JAN 78                                    | JUL 78                                   |
| 5 77 4289 | STUDIES OF HAZARD CLASSIFICATION OF EXPLOSIVES AND PROPELLANT<br>A NEW PROPAGATION TEST WAS DEVELOPED AND RUN ON M1 AND M30<br>PROPELLANTS, A DENSITY STUDY AND TESTS WERE CONDUCTED TO<br>ESTABLISH STANDARD LOADING PROCEDURES FOR IN-PROCESS MATLS. A<br>MODIFIED CRITICAL DIAMETER TEST AND CRITICAL LENGTH EXP DESIGN<br>DEVELOPE | 306.0                | 187.6                        | 77.6   | AUG 78                                    | NOV 78                                   |
| 5 76 4291 | BLAST EFFECTS IN MUNITION PLANT ENVIRONMENT<br>TEST OF PREENGINEERED BLDG SUBJ TO BLAST LOAD IS COMPL, FOLLOW-ON<br>T8TG IS SCHED FOR NOV 78 TO LOOK AT STRENGTHENED BLDG EFFECTS AT<br>DUGWAY PG. REPORT BEING COMPL ON PRIOR, BLAST CAP EVAL OF GLASS<br>WINDOWS AND ALUM FRAMES READY FOR RELEASE.                                  | 700.0                | 336.1                        | 364.0  | DEC 76                                    | DEC 78                                   |
| 5 77 4291 | BLAST EFFECTS IN MUNITION PLANT ENVIRONMENT<br>FINAL REPT ON FREEING BLDG SUBJ TO BLAST BEING PREPARED, DESIGN OF<br>HARDENED STEEL STRUCTURE COMPLETED AND SHOS PREPARED AND BID FOR<br>CONSTRUCTION RECD.  | 350.0                | 176.1                        | 909.2  | JUN 78                                    | MAY 79                                   |
| 5 76 4300 | PRODUCT ASSURANCE IN SUPPORT OF AMMUNITION PLANT MODZATION<br>**** DELINQUENT STATUS REPORT ****   | 353.0                | 0.0                          | 306.4  | NOV 76                                    | FEB 78                                   |
| 5 77 4301 | ACCEPT PLAN FOR CONTINUOUSLY PROD MULTIBASE CANNON PROP-CAM<br>WORK ON DIMENSION ANALYSIS OF MULTI-PERF PROPELLANT GRAINS USING<br>THE IMAGE ANALYZER WAS COMPLETED, THE METHOD WAS REVIEWED AT<br>ARRADCOM AND WILL BE INCLUDED IN MIL-STD-286.   | 110.0                | 15.0                         | 95.0   | JUN 77                                    | OCT 78                                   |



SUMMARY PROJECT STATUS REPORT  
1ST SEMIANNUAL SUBMISSION CY 76 RCS DRCHT-301

| PROJ NO.  | TITLE + STATUS   | AUTHORIZED<br>(\$000) | CONTRACT<br>VALUES<br>(\$000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(\$000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESIDENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|--|-----------------------|-------------------------------|---|---|--|
| 5 76 4301 | ACCEPT PLANECONT PRODUCE MULTI-BASE CANNON PROPELLANT<br>FINAL REPORT ON PRINCETON'S STUDY OF PROPELLANT POROSITY AND<br>BURNING RATE VIA ACOUSTIC EMISSION DETECTION WAS RECEIVED. WORK<br>WAS STOPPED ON CHEMILUMINESCENT RAPID STABILITY ANALYSIS OF MB<br>PROPELLANTS, NO ADVANTAGE WAS FOUND OVER CURRENT TECHNIQUES. | 399.0                 | 180.0                         | 215.0   | OCT 76                                    | OCT 76                                     |
| 5 77 4301 | ACCEPT PLANECONT PRODUCTION MULTI-BASE CANNON PROPELLANTS<br>PROCUREMENT ACTION WAS CONTINUED TO AWARD CONTRACT #/DESIGN AND<br>FABRICATION OF ADVANCED DYNAGUN BALLISTIC SIMULATOR. PROJECT IS<br>UNDERGOING REVISION TO REPLACE DOUBLE-BASE STUDY WITH AN<br>ADDITIONAL TRIPLE BASE FORMULATION.                         | 500.0                 | 170.0                         | 231.0   | MAY 78                                    | OCT 78                                     |
| 5 77 4302 | ACCEPTANCE CRITERIA FOR CONTINUOUS SINGLE BASE PROPELLANT<br>A RAPID METHOD FOR STABILITY ANALYSIS OF SINGLE BASE PROPELLANTS<br>HAS BEEN DEVELOPED IS UNDERGOING REVIEW PRIOR TO INCLUSION IN<br>MIL-STD-286. DATA ANALYSIS OF PROPELLANT CAN-TO-CAN VARIATIONS IS<br>CONTINUING AT ARRADCOM.                             | 75.0                  | 8.0                           | 67.0  | SEP 77                                    | JUL 78                                     |
| 5 76 4302 | ACCEPTANCE CRITERIA FOR CONTINUOUS SINGLE BASE PROPELLANT<br>THE DYNAGUN TEST PROGRAM FOR THIS PROJECT WAS COMPLETED. A FINAL<br>REPORT IS BEING PREPARED.   | 440.0                 | 317.0                         | 123.0   | JUN 77                                    | JUL 78                                     |
| 5 76 4303 | ACCEPTANCE OF CONTINUOUSLY PRODUCED BLACK POWDER<br>TESTING OF DEVIANT LOTS OF BLACK POWDER WAS PERFORMED USING THE<br>STATIC TEST FIXTURES. THESE FIXTURES SIMULATE THE ARTTY PRIMER,<br>THE CENTER CORE CHARGE AND THE BASE PAD CHARGE.  | 337.0                 | 157.7                         | 145.0   | APR 77                                    | AUG 78                                     |
| 5 77 4303 | ACCEPTANCE OF CONTINUOUSLY PRODUCED BLACK POWDER<br>PRINCETON COMPLETED FABRICATION OF FLAME SPREAD DEVICE. DEVIANT<br>SAMPLES WERE TESTED IN THIS DEVICE. IAP COMPLETED TESTING OF<br>DEVIANT SAMPLES USING CLOSED GOMB AND CHEMICAL ANALYSIS. RESULTS<br>WERE FURNISHED TO ARRADCOM FOR COMPARISON.                      | 60.0                  | 60.0                          | 0.0   | JUN 78                                    | APR 79                                     |
| 5 77 4304 | SPIN TEST FOR ACCEPTANCE OF ROCKET GRAINS-STARG<br>WORK ON THIS PROJECT HAS BEEN DISCONTINUED DUE TO THE ACCURACY<br>REQUIREMENTS OF THE MS49 ROCKET. THIS SYSTEM WAS BEING DESIGNED TO<br>AN ACCURACY REQUIREMENT OF 1%, THE MS49 ACCURACY REQUIREMENT IS<br>0.2%. THE DESIGN CAN NOT ACHIEVE THIS ACCURACY.              | 300.0                 | 84.9                          | 41.0  | JUN 79                                    | JUN 79                                     |
| 5 75 4310 | *RECRYSTALLIZATION AND GROWTH OF HMX + ROX<br>THIS IS THE FINAL REPORT. A PILOT PLANT WAS DESIGNED CONSISTING<br>OF AN EVAPORATOR, CRYSTALLIZER AND EXPLOSIVES/SOLVENT SEPARATION<br>SYSTEMS. EQUIPMENT WAS PROCURED AND BLOC C-66 AT MAAP MODIFIED TO<br>ACCOMMODATE THE PILOT PLANT.                                     | 461.0                 | 294.1                         | 166.9   | MAR 76                                    | JUL 78                                     |

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
S U M M A R Y P R O J E C T S T A T U S R E P O R T  
18T SEMIANNUAL SUBMISSION CY 78 RCS ORCNT-301

| PROJ NO.  | TITLE + STATUS   | AUTHOR-<br>RIZED | CONTRACT<br>VALUES<br>(\$000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(\$000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|--|------------------|-------------------------------|---|---|--|
| 5 76 4310 | •OMSD RECRYSTALLIZATION OF HMX/ROX.<br>THIS IS THE FINAL REPORT. INSTALLATION OF THE OMSO PILOT PLANT<br>EQUIPMENT WAS PERFORMED. HAZARD ANALYSIS OF THE SYSTEM WAS<br>INITIATED.  | 400.0            | 310.0                         | 90.0  | APR 77                                    | JUL 78                                   |
| 5 77 4310 | •OMSD RECRYSTALLIZATION OF HMX/ROX<br>THIS IS THE FINAL REPORT. INSTALLATION OF THE OMSO PILOT PLANT<br>EQUIPMENT AND HAZARD ANALYSIS IS COMPLETED. A LATE START FY78<br>PROJECT WILL BE SUBMITTED TO COMPLETE THERMAL INSULATION OF<br>PROCESS AND SERVICE PIPING AND TO PROVE-OUT/OPTIMIZE PROCESS.                  | 200.0            | 200.0                         | 0.0   | JUN 78                                    | JUL 78                                   |
| 5 76 4311 | AUTO PROD EQUIP FOR LAP OF XM 692 MINE DISPENSING SYSTEM<br>OVER 90% OF ALLPURCHASED COMPONENTS AND MACHINED PARTS NECESSARY<br>FOR TOOLING HAVE BEEN OBTAINED. ASSEMBLY OPERATIONS ARE 40%<br>COMPLETE  | 1,230.0          | 1,044.8                       | 175.6   | OCT 77                                    | AUG 78                                   |
| 5 77 4311 | DEVELOP AUTOMATED PRODUCTION EQUIPMENT FOR XM 692<br>ALL PHASE 3 SYSTEM COMPONENTS HAVE BEEN PURCHASED AND MOST SYSTEM<br>HARDWARE FABRICATED. ASSEMBLY OF ANCILLARY EQUIPMENT IS UNDERWAY.  | 1,073.0          | 645.1                         | 110.8   | AUG 78                                    | JAN 79                                   |
| 5 76 4327 | AUTOMATIC X-RAY INSPECTION SYSTEM-AXIS<br>FOR STATUS SEE PROJECT 5 77 4327   | 160.0            | 95.0                          | 60.9  | SEP 78                                    | JAN 80                                   |
| 5 77 4327 | AUTOMATIC X-RAY INSPECTION SYSTEM-AXIS<br>BENCH MODEL ASSEMBLY WAS COMPLETED BY THE CONTRACTOR. THE<br>DEVELOPMENT OF THE FILM INTERPRETATION ALGORITHMS WERE COMPLETED.<br>THE BENCH MODEL DEMONSTRATION WAS CONDUCTED. THE PROTOTYPE<br>PROCUREMENT SPECIFICATION WAS SUBMITTED TO PROCUREMENT.                      | 100.0            | 99.4                          | 0.0   | JUL 79                                    | JAN 80                                   |
| 5 76 4337 | ALTERNATE MATERIALS FOR CURING/HOLDING PROCESS F/AP MINES<br>TESTS TO PROVE-OUT THE ACCELERATOR ATC-3 CONTINUED. AND A TEST<br>PROGRAM TO DETERMINE THE FEASIBILITY OF/UV HIGH INTENSITY LIGHT<br>CURING OF PUTTING COMPOUNDS WAS INITIATED. TWO OF THE CONTRACT<br>EFFORTS WERE CANCELLED AT THE DIRECTION OF THE PH. | 504.0            | 110.0                         | 112.6   | AUG 78                                    | MAR 79                                   |
| 5 76 4338 | DEV AUTO PROCESS + PROTO EQUIP FOR LAP OF M403 155MM PROJ<br>THE DESIGN OF THE TAPE STIFFENER ASSEMBLY MACHINE HAS PROCEEDED<br>WELL. SUBMISSION OF FINAL DESIGN DRAWINGS HAS SLIPPED TWO WEEK<br>BECAUSE THE DESIGN MUST CONSIDER SPACE AVAILABILITY FOR THE<br>MACHINES AT TWO LOCATIONS, I.E., LSAAP AND KAAP.      | 758.6            | 532.0                         | 57.0  | MAR 79                                    | MAY 80                                   |
| 5 77 4341 | IMPROVED NITROCELLULOSE PURIFICATION PROCESS<br>AN ECONOMIC ANALYSIS COMPARING VARIOUS APPROACHES TO IMPROVE NC<br>PURIFICATION FACILITIES WAS COMPLETED. THE ANALYSIS SHOWED THE<br>ECONOMIC SUPERIORITY OF THE CONTINUOUS CONICELL TYPE SYSTEM. A<br>SMALL AUTOCLAVE IS BEING USED FOR BENCH SCALE STUDIES.          | 165.0            | 95.0                          | 70.0  | DEC 77                                    | FEB 78                                   |

SUMMARY PROJECT STATUS REPORT  
1ST SEMIANNUAL SUBMISSION CY 78 RCB DRCMT-301

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM

| PROJ NO.  | TITLE + STATUS  | AUTHORIZED<br>(\$000) | CONTRACT<br>VALUES<br>(\$000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(\$000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|---|-----------------------|-------------------------------|---|---|--|
| 5 78 4341 | IMPROVED NITROCELLULOSE PURIFICATION PROCESS<br>FUNDS WERE TRANSFERRED TO RAAP.   | 529.0                 | 439.0                         | 0.0   | APR 79                                    | APR 79                                   |
| 5 77 4343 | IMPROVED NITROCELLULOSE PROCESS CONTROL<br>LITERATURE REVIEW CONTINUED. CHARACTERIZATION OF WOOD PULP<br>CELLULOSE WAS STARTED IN THE LAB. PHYSICAL AND CHEMICAL<br>PROPERTIES OF 10 TYPES OF PULP FROM 5 SUPPLIERS WERE DETERMINED.<br>NITRATION OF THE VARIOUS PULPS WAS STARTED.                                     | 302.0                 | 117.0                         | 134.4   | JUL 78                                    | DEC 78                                   |
| 5 78 4349 | MODERNIZATION OF PRESS LOADING FOR MFP PROJECTILES<br>FUNDING WAS JUST RECEIVED IN JUNE. NOW WORK HAS BEEN<br>ACCOMPLISHED.   | 280.0                 | 0.0                           | 0.0   | JUN 80                                    | JUN 80                                   |
| 5 77 4362 | REPEAT OF LARGE CAL PROJECTILES TO ELIMINATE BASE SEPARATE<br>CONTROLLED COOLING SYSTEM HAS BEEN INSTALLED, TESTED, AND<br>DEBUGGED. PROCESS DEVELOPMENT TEST WERE INITIATED FOR THE 155MM<br>MS49. SATISFACTORY RESULTS WERE USED TO DEVELOP A CONTROLLED<br>COOLING PROCEDURE FOR TNT LOADING 155MM MS49 PROJECTILES. | 400.0                 | 28.8                          | 275.6   | APR 78                                    | DEC 78                                   |
| 5 77 4410 | MFG TUNGSTEN PENETRATORS TO SHAPE BY TAPER SHAVING<br>THE TWO STEP SHAGED PENETRATORS PASSED BALLISTIC TESTS, THE<br>VARIED DIE SHAGED PENETRATORS PASSED BALLISTIC TESTS, HOWEVER<br>MORE THAN NORMAL VARIABILITY WAS NOTED.   | 397.0                 | 249.0                         | 6.5   | MAR 78                                    | MAR 78                                   |
| 5 77 4416 | *ALTERNATE MFG PROCESS FOR 84-GENS3<br>FINAL TESTS WERE CONDUCTED ON THE PEP 84A. BASED UPON RESULTS OF<br>THESE TESTS AND TESTS BY THE XHYS CONTRACTOR, THE PEP 84A HAS<br>BEEN INCLUDED IN DT II TESTS AND IS ANTICIPATED TO BE TYPE<br>CLASSIFIED IN THE XM74 + XM75 MINES.  | 120.0                 | 118.4                         | 1.6   | SEP 77                                    | JUL 78                                   |
| 5 77 4431 | AUTOMATED EQUIPMENT FOR MORTAR IGNITION CARTRIDGES<br>A CONTRACT WAS AWARDED TO FMC CORP FOR DESIGN AND FABRICATION.<br>THE CONTRACTOR HAS SUBMITTED CONCEPT DESIGNS AND WERE REVIEWED<br>AND APPROVED FOR DETAILED DESIGN.   | 850.0                 | 653.8                         | 103.6   | DEC 78                                    | DEC 78                                   |
| 5 78 4431 | AUTOMATED EQUIPMENT FOR MORTAR IGNITION CARTRIDGES<br>CHANGES WERE MADE TO PHASES 3 AND 4 OF THE SCOPE OF WORK. PLANS<br>ARE TO AWARD A CONTRACT FOR THIS WORK IN LATE JUNE 1978  | 688.0                 | 598.0                         | 0.0   | JUL 79                                    | JUL 79                                   |
| 5 77 4435 | OPR PROTOP 848 FOR 105MM M67 PROP CMG MOD<br>PERFORMANCE SPECS WERE CONTINUED FOR PROCUREMENT PACKAGES IN<br>SUPPORT OF PROJ S 78 2500. INCIDENT WEATHER AND POWER CUTBACK<br>HAS DELAYED PROJECT. AIR COMPRESSOR HAS BEEN RETURNED TO THE<br>PROTOTYPE BOOTH BUILDING.   | 500.0                 | 375.0                         | 118.0   | DEC 77                                    | OCT 78                                   |

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
S U M M A R Y P R O J E C T S T A T U S R E P O R T  
1ST SEMIANNUAL SUBMISSION CY 78 RCS DRCHT-301

| PROJ NO.  | TITLE + STATUS   | AUTHORIZED | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|-----------|--|------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| 5 77 4444 | BODY FOR M42/M46 GRENADE<br>THREE OF THE FOUR CONTRACTORS HAVE SUBMITTED PARTS. THESE PARTS HAVE BEEN INSPECTED AND FORWARDED TO LONE STAR FOR LOADING.  | 536.0      | 446.8                   | 85.3                                | SEP 77                           | AUG 78                          |
| 5 78 4444 | BODY FOR M42/M46 GRENADE<br>WORK WILL BE INITIATED WHEN PRIOR PROJECT IS COMPLETE.   | 626.0      | 0.0                     | 8.2                                 | JUN 79                           | JUN 79                          |
| 5 78 4447 | NITROGUANIDINE PROCESS CONTROL ANALYTICAL SYSTEMS<br>THE NO PROCESSES WERE REVIEWED TO DETERMINE IN WHICH STREAMS ANALYTICAL METHODS REQUIRED FURTHER DEVELOPMENT. THE DECISION WAS MADE TO DEVELOP RAPID METHODS FOR THE ANALYSIS OF CYANIMIDE AND SULFATE IONS. LITERATURE SEARCHES WERE MADE.                       | 220.0      | 20.0                    | 49.2                                | JUL 79                           | JUL 79                          |
| 5 78 4449 | PROCESS IMPROVEMENT FOR COMPOSITION C-4<br>NO WORK HAS OR WILL BE DONE UNTIL THE PRELIMINARY WORK NOW IN PROGRESS UNDER PROJECT 5 77 4252 IS COMPLETED. ESTIMATED TIME OF TRANSFER OF WORK TO THIS PROJECT IS DEC, 1978.   | 1,000.0    | 0.0                     | 0.4                                 | OCT 79                           | JUL 80                          |
| 5 78 4454 | AUTO INSPECTION DEVICE OF EXPLOSIVE CHG IN SHELL-AIDEC<br>THE ENGINEER MODEL GENERAL PERFORMANCE REQUIREMENTS HAVE BEEN DEFINED. THE CONTRACTOR FOR THIS MODEL HAS VERIFIED THE REQUIREMENTS. THE PRODUCTIBILITY DIFFICULTIES ASSOCIATED WITH THE ENGR. MODEL DETECTOR ROLLINATOR HAS BEEN RESOLVED.                   | 1,348.0    | 0.0                     | 55.6                                | JUL 80                           | JUL 80                          |
| 5 78 4456 | MATERIALS PROPERTY DATA INFORMATION SYSTEM<br>CONVERSION OF THE SOFTWARE TO THE CDC SYSTEM HAS COMPLETED. THE INTERACTIVE SYSTEMS OPERATIONS (GRAPHICS) PACKAGE HAS INSTALLED.   | 100.0      | 70.0                    | 20.5                                | DEC 78                           | JUN 78                          |
| 5 77 4457 | MULTI-TOOLED IOWA DETONATOR LOADING MACHINE<br>ALL MECHANICAL AND CONTROL ASPECTS OF THE LOADER HAVE BEEN TESTED UNDER INERT CONDITIONS. ALL FUNCTIONS ARE CONSIDERED TO BE ACCEPTABLE EXCEPT THE RDX FEEDER WHICH HAS BEEN REDESIGNED.  | 642.0      | 617.0                   | 25.0                                | NOV 76                           | NOV 78                          |
| 5 77 4462 | MODERNIZED PAD FOR MULTI-BASE PROPELLANTS<br>FORTY SOLVENT ABSORPTION TESTS WERE CONDUCTED. PARAMETERS SUCH AS TEMPERATURE, SOLVENT STRENGTH, AND NUMBER OF SCRUBBERS WERE VARIED. SCRUBBER AND DISTILLATION EQPT MFGRS WERE CONTACTED AND THE TEST DATA WAS DISCUSSED WITH THEM.                                      | 163.0      | 133.0                   | 10.0                                | JAN 78                           | AUG 78                          |
| 5 78 4466 | EVAL TNT, CYLOTOL, ANATEX, OCTOL WITH PA MELT POUR FACIL<br>DATA WAS COLLECTED AND STUDIED ON PREVIOUS WORK IN TNT MELT-LOADING. INFORMATION WAS OBTAINED ON INSTRUMENTATION TESTED BY THE NAVY. THE MOST PROMISING SEEMS TO BE THE DENSITOMETER OR THE ELECTRONIC TORQUE METER FOR DETECTING AND CONTROLLING DENSITY. | 200.0      | 0.0                     | 27.8                                | DEC 78                           | DEC 78                          |



MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
SUMMARY PROJECT STATUS REPORT  
1ST SEMI-ANNUAL SUBMISSION CY 78 RCH DRCHT-301

| PROJ NO.  | TITLE + STATUS  | AUTHORIZED<br>RIZED<br>(\$000) | CONTRACT<br>VALUES<br>(\$000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(\$000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|---|--------------------------------|-------------------------------|---|---|--|
| 5 76 4466 | AUTOMATED INSERTION OF GRENADE LAYERS.<br>A SCOPE OF WORK FOR THE DEVELOPMENT OF AUTOMATED EQUIPMENT HAS<br>PREPARED AND FORWARDED TO PROSPECTIVE BIDDERS. EVALUATION OF FIVE<br>BIDS WAS BEGUN.  | 502.0                          | 11.0                          | 21.3  | APR 79                                    | APR 79                                   |
| 5 76 4472 | DEV EQUIP/ PROC FOR AUTO/MECH FAB OF CENTER CORE PROP BAG<br>PROCUREMENT PROCESS WAS INITIATED.   | 219.0                          | 148.0                         | 14.2  | JAN 79                                    | JAN 79                                   |
| 5 77 4481 | PYROLYSIS OF ARMY AMMUNITION PLANT SOLID WASTE<br>A DATA BASE IS BEING ESTABLISHED TO IDENTIFY ALL OF THE COMPANIES<br>INVOLVED IN PYROLYSIS TECHNOLOGY. A STUDY CONTRACT WAS AWARDED TO<br>TRM TO INVESTIGATE THE APPLICATION OF PYROLYSIS TECHNOLOGY TO AAP<br>SOLID WASTE. LAAP IS QUANTIFYING SOLID WASTE MADE. | 100.0                          | 11.0                          | 42.2  | DEC 77                                    | MAR 81                                   |
| 5 76 4498 | DEVELOP CONCEPTS FOR CONSOL + AUTO ASSY OF SMALL MINES<br>INITIAL STUDY TO DEFINE WHICH TASK TO PROCEED WITH HAS BEEN<br>COMPLETED. SCOPE OF WORK HAS BEEN FORWARDED TO ARSCOM.   | 329.0                          | 0.0                           | 9.6   | DEC 80                                    | MAY 80                                   |
| 5 76 4500 | AMMO TEST TECH FOR INHED DATA ACQ, REDUC, ANALY, DISSEM, CAM REL<br>THIS PROJECT IS COMPLETE. FINAL REPORT PRESENTED MAY 76. ACTION<br>IS BEING TAKEN TO IMPLEMENT THE INFORMATION GENERATED IN THE<br>COURSE OF THIS PROGRAM.  | 190.0                          | 183.3                         | 6.7   | OCT 76                                    | JUL 78                                   |
| 5 76 4508 | PROCESS IMPROVEMENT OF PRESSABLE RDX COMPOSITIONS<br>NO WORK HAS OR WILL BE DONE UNTIL THE PRELIMINARY WORK NOW IN<br>PROGRESS UNDER 5 77 4292 IS COMPLETED. ESTIMATED TIME OF TRANSFER<br>OF WORK TO THIS PROJECT IS DEC, 1978.  | 300.0                          | 241.0                         | 0.0   | NOV 78                                    | DEC 79                                   |
| 5 76 6200 | SMALL CALIBER AMMO PROCESS IMPROVEMENT PROGRAM<br>THE PHASE 3 INTEGRATION CONTRACT WAS PLACED WITH REMINGTON ARMS.<br>A SCOPE OF WORK FOR ONE FOLLOW-ON SLUG FEEDER WAS PREPARED.<br>ACCEPTANCE OF THE SUBMODULE AT LCAAP IS IN PROGRESS.   | 1,300.0                        | 239.0                         | 864.0   | AUG 76                                    | NOV 78                                   |
| 5 77 6200 | SMALL CALIBER AMMO PROCESS IMPROVEMENT PROGRAM<br>A CONTRACT WAS LET TO GULF + WESTERN TO INVESTIGATE A NEW PROCESS<br>FOR THE 2 DRAM 5.56 CUPS. WATERBURY FERREL WILL BE AWARDED A<br>SIMILAR CONTRACT WITH EMPHASIS ON THE CONVENTIONAL PROCESS.<br>IMPROVED DIMENSIONAL CHARACTERISTICS IS THE MAJOR EMPHASIS.   | 930.0                          | 920.0                         | 6.0   | FEB 77                                    | JUL 79                                   |
| 5 75 6211 | INTERED STEEL PREFORMS FOR WORKING INTO FRAG SHELL BODIES<br>SEVERAL SUCCESSFULLY FORMED BODIES WERE TESTED FOR LETHALITY.<br>FINAL REPORT WILL BE PREPARED.  | 230.0                          | 10.4                          | 170.2   | DEC 77                                    | SEP 78                                   |
| 5 76 6472 | APPLN OF ALY PROCES FOR FAB OF PRECIS METAL PARTS FOR MTFUZE<br>41688 PINTON STOCK WAS EXTRUDED AT AMBIENT TEMPERATURE USING A<br>COPPER COATING AS A LUBRICANT. WORK WAS DONE ON THE DESIGN OF THE<br>DIES TO DRAW EXTRUDED PINTON STOCK DOWN TO FINAL SIZE.   | 400.0                          | 335.6                         | 0.9   | FEB 78                                    | SEP 79                                   |

SUMMARY PROJECT STATUS REPORT  
1ST SEMIANNUAL SUBMISSION CY 76 RCS DRGHT-301

| PROJ NO.  | TITLE + STATUS   | AUTHORIZED<br>(3000) | CONTRACT<br>VALUES<br>(3000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(3000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|--|----------------------|------------------------------|--|---|--|
| 5 77 6494 | NEW CONCEPTS FOR MFR AND INSPECT OF 20MM 25MM 30MM AMMO<br>SEE PROJECT 5 76 6494 FOR WORK STATUS.  | 1,300.0              | 748.9                        | 321.4  | AUG 79                                    | FEB 79                                   |
| 5 75 6494 | MANUFACTURE AND INSPECTION OF CAL.50, 20MM, AND 30MM AMMO<br>A TECHNICAL EVALUATION OF THE AAI PROPOSAL WAS COMPLETED.<br>CONTRACT NEGOTIATIONS ARE IN PROGRESS TO RESOLVE DIFFERENCES. THE<br>FINAL REPORT FOR PHASE I WAS SUBMITTED.   | 3,760.0              | 1,746.3                      | 1,869.9  | DEC 76                                    | DEC 78                                   |
| 5 76 6494 | MANUFACTURE AND INSPECTION OF CAL.50, 20MM, AND 30MM AMMO<br>FABRICATION OF THE TRACE DETECTING EQUIPMENT WAS COMPLETED.<br>REMINGTON HAS COMPLETED FABRICATION OF THE TWO AUTOMATIC FIRING<br>CONTROL BOXES AND INTEGRATION INTO THE COMPUTER SYSTEM.<br>ADDITIONAL FUNDS WERE REQUESTED FOR COMPLETION OF THE LCAAP<br>EFFORT. | 1,200.0              | 921.0                        | 259.0  | DEC 77                                    | FEB 79                                   |
| 5 77 6494 | NEW CONCEPTS FOR MFR AND INSPECT OF 20MM 25MM 30MM AMMO<br>THE FEASIBILITY STUDY FOR LOADING THE 84533 PROJECTILE IS 70%<br>COMPLETE. THE STUDY WAS DELAYED BY LATE RECEIPT OF GPE AND A FIRE<br>ON THE NO. 6 LOAD LINE AT RAVENNA.  | 2,220.0              | 0.0                          | 656.7  | JUN 79                                    | FEB 79                                   |
| 5 77 6553 | ADAPT ACQUIS ANALY-INSPECT OF HELOED OVERLAY BAND-ARTY SHELL<br>TASK COMPLETED. THE PRODUCTION LINE TEST OF THE HELOED OVERLAY<br>BAND INSPECTION ENGINEERING MODEL AND FINAL REPORT WAS COMPLETED<br>APR. 78.   | 100.0                | 10.7                         | 89.3   | JAN 78                                    | APR 78                                   |
| 5 76 6557 | CONTINUOUS PROPELLANT DRYING SALT COATING AND GLAZING.<br>ALL MAJOR EQUIPMENT COMPONENTS AND PIPING HAVE BEEN INSTALLED. A<br>FIRE PROTECTION SYSTEM CONSISTING OF UV DETECTORS AND DELUGE<br>NOZZLES WAS DESIGNED. THE SURFACE COATING SUBTASK WAS DELETED, A<br>COST OVERRUN HAS OCCURRED.                                     | 734.0                | 683.0                        | 51.0   | DEC 76                                    | MAR 80                                   |
| 5 75 6558 | CAN-ADAPTATION OF AUTOMATIC DYNAMIC/STATIC PUZE REGULATION<br>THIS PROJECT IS COMPLETE. THE EVALUATION REPORT REVEALED DESIGN<br>REFINEMENTS ARE NECESSARY BEFORE THE EQUIP CAN BE UTILIZED IN<br>PRODUCTION. THE CONTRACTOR IS PROCEEDING TO ACCOMPLISH THE<br>REQUIRED WORK WITHIN THE REMAINING CONTRACT FUNDS.               | 315.0                | 68.6                         | 210.7  | MAR 76                                    | NOV 78                                   |
| 5 75 6562 | CONTINUOUSLY CAST STEEL FOR AMMO METAL PARTS MFR.<br>FINAL REPORT BEING PREPARED.  | 150.0                | 0.0                          | 150.0  | NOV 75                                    | AUG 78                                   |
| 5 74 6571 | ENGR SUPPORT OF MORTAR AMMO MPTS MODERNIZATION<br>60MM LETHALITY PROGRAM WAS COMPLETED AND THE 4 CANDIDATES TESTED<br>WERE EQUIVALENT. 81MM MICROSTRUCTURE AND MECHANICAL PROPERTY<br>STUDIES WERE COMPLETED. 60 MM PIT FRAGMENTATION TESTS ARE<br>CONTINUING.   | 970.0                | 512.0                        | 458.0  | DEC 76                                    | OCT 78                                   |

SUMMARY PROJECT STATUS REPORT  
1ST SEMI-ANNUAL SUBMISSION CY 76 RCB DRCMT-301

| PROJ NO.  | TITLE + STATUS  | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESSENT PROJECTED COMPLETE DATE |
|-----------|---|--------------------|-------------------------|-------------------------------------|----------------------------------|----------------------------------|
| 5 73 6580 | INDUCTION HEAT TREATING OF PROJECTILE SHAPES<br>BOTH SCAN AND STATIC METHODS FOR INDUCTION HEAT TREATING OF 8INCH M509 AND 155MM M483 PROJECTILE BODIES WERE INVESTIGATED. BOTH METHODS WERE DETERMINED TO BE UNECONOMICAL WHEN COMPARED TO CONVENTIONAL HEAT TREATING SYSTEMS.                                 | 220.0              | 135.4                   | 84.6                                | DEC 74                           | JUL 78                           |
| 5 76 6596 | BALL PROPELLANT PILOT PLANT STUDIES<br>THE AVERAGE DIAMETER OF THE BALL PROP PRODUCED IN THE 10-GAL STILL WAS LOWER THAN EXPECTED. SCALE-UP FACTORS BASED ON TIP SPEEDS WERE NOT VALID. THE 10-GAL STILL WAS EVALUATED FOR EFFECTIVENESS AS A MIXER BY REPLACING THE TYPE OF AGITATOR.                          | 1,230.0            | 1,130.0                 | 97.0                                | OCT 78                           | JUL 78                           |
| 5 77 6596 | BALL PROPELLANT PILOT PLANT STUDIES<br>THE DESIGN AND FABRICATION OF AN EXTERNAL LACQUER MIXER WAS CONTRACTED FOR WITH GROEN. THE PRINT OF THE DESIGN HAS BEEN RECEIVED FOR REVIEW AND APPROVAL. SCHEDULE DELAYS HAVE OCCURRED AND MORE ARE EXPECTED BECAUSE THE CONTRACTOR IS BUSY WITH OTHER WORK             | 1,095.0            | 894.0                   | 50.0                                | JUL 78                           | JUL 78                           |
| 5 78 6596 | BALL PROPELLANT PILOT PLANT STUDIES<br>NO FY78 FUNDS WERE EXPENDED.   | 1,084.0            | 984.0                   | 0.0                                 | JAN 79                           | JAN 79                           |
| 5 76 6599 | 2ND GENER ELEC-OPIC PROJ CAVITY INS EQ FOR 155-175MM PROJOS<br>THE CONTRACTOR IS FINAL TESTING THE SYSTEM AND SHOULD BE AVAILABLE IN ADD. FOR DEMONSTRATION. THE GFE TV CAMERA INTERMITTENT OPERATION HAS CREATED CHECKOUT DIFFICULTIES. ACTION HAS BEEN TAKEN TO ACQUIRE A NEW GFE TV CAMERA.                  | 133.0              | 125.5                   | 7.5                                 | SEP 77                           | JUN 79                           |
| 5 76 6625 | AUTO ASSY+INSPECT LINE FOR BEEHIVE FUZE MOVEMENTS.<br>WORK COMPLETED. THIS PROJECT ESTABLISHED THE MACHINE AND TOOL DESIGN FOR FACILITIES PROJECT NO. 5786652. FIVE OF THE DESIGNS COMPLETED WILL BE UTILIZED TO UPDATE PRIOR BUILT MACHINE, FACILITIES PROJECT NO. 5786652                                     | 750.0              | 721.0                   | 22.0                                | JUN 77                           | DEC 77                           |
| 5 76 6628 | AUTOMATED INSPECT. OF M.T. FUZE COMPONENTS-MOVE, PLATES=<br>NO WORK ACCOMPLISHED DURING THIS REPORT PERIOD.   | 250.0              | 189.6                   | 42.6                                | JAN 77                           | SEP 78                           |
| 5 76 6632 | AUTO INSPECTION DEVICES FOR ART PROJECTILES IN MOD PLANTS<br>HOT FORGING DIMENSIONAL EQUIP. CONTRACT IS 80% COMPLETE. THE FLASH HOLE DETECTOR/HOTART PINS CONTRACT IS 85% COMPLETE. ULTRASONIC BILLET INSPECTION SYSTEM WAS INSTALLED FOR EVALUATION. THE CONTRACTOR IS IN THE PROCESS OF DEBUGGING THE SYSTEM. | 367.0              | 283.1                   | 71.8                                | SEP 77                           | SEP 78                           |
| 5 77 6632 | AUTO INSPECTION DEVICES FOR ART PROJECTILES IN MOD PLANTS<br>155MM, M483 PROJECTILE EDDY CURRENT INSP. SYSTEM SUPPLY CONTRACT WAS AWARDED 17 MAY 1978. 155MM LEAK TESTER PROCUREMENT ACTION WAS CANCELLED PER DRCMT-PBM-M INSTRUCTIONS.   | 589.0              | 291.0                   | 34.0                                | SEP 78                           | MAY 79                           |

SUMMARY PROJECT STATUS REPORT  
1ST SEMIANNUAL SUBMISSION CY 78 RCS DRCHT-301

| PROJ NO.  | TITLE + STATUS  | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|-----------|---|--------------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| 5 76 6634 | MFG DU ALLOYS FOR LARGE CALIBER ARMOR DEFEATING PROJOS<br>NICKEL BOATS HAVE BEEN FABRICATED AND RECYCLING STUDIES HAVE BEEN RE-INITIATED.   | 500.0              | 0.0                     | 500.0                               | AUG 77                           | SEP 78                          |
| 5 77 6634 | MFG DU ALLOYS FOR LARGE CALIBER ARMOR DEFEATING PROJOS<br>A CONTRACT WITH NETCO HAS BEEN PLACED FOR MECHANICALLY FORMING THE THREADS.   | 707.0              | 245.0                   | 412.8                               | JAN 78                           | JAN 79                          |
| 5 78 6634 | MFG DU ALLOYS FOR LARGE CALIBER ARMOR DEFEATING PROJECTILE<br>WORK TO EVALUATE VARIOUS HEAT TREAT PROCESSES HAS BEGUN AT NATIONAL LEAD OF OHIO.   | 400.0              | 0.0                     | 6.4                                 | FEB 79                           | FEB 79                          |
| 5 76 6640 | PROD CONTROL/QA OF SHAPED CHG LINERS BY AUTO X-RAY ANAL<br>EXAMINATION OF THE FLASH RADIOGRAPHS IS CONTINUING WITH SPECIAL EMPHASIS ON EXAMINING THE DUCTILE-BRITTLE TRANSITION REGION.   | 133.0              | 55.8                    | 77.2                                | DEC 76                           | OCT 78                          |
| 5 77 6640 | PROD CONTROL/QA OF SHAPED CHG LINERS BY AUTO X-RAY ANAL<br>ATTEMPTS ARE BEING MADE TO PRODUCE SYMMETRICALLY ROUNDED CONE USING CROSS ROLLED MATL. THE TOOLING FOR THIS CROSS ROLLED CONE HAS BEEN FABRICATED. THE CROSS ROLLED MATL IS EXPECTED TO BE DELIVERED IN THE NEAR FUTURE WHEREUPON PRODUCTION WILL START.     | 185.0              | 71.5                    | 64.7                                | JUN 78                           | SEP 78                          |
| 5 76 6642 | INERTIA WELDED ROTATING BANDS FOR PROJECTILE BODIES.<br>CONTRACTOR IS AWAITING YPG FIRING REPORT TO COMPLETE FINAL REPORT.  | 447.0              | 275.0                   | 172.0                               | FEB 77                           | JUN 78                          |
| 5 75 6654 | ANOT METHODS OF QC IN MFG OF ADVANCED FRAG. STEEL SHELLS<br>TASK COMPLETE. ULTRASONIC MULTI-TRANSDUCER STUDY INDICATED THAT CYLINDRICAL PORTIONS OF THE 155MM PROJECTILE COULD BE AUTOMATED. THE INSPECTION OF THE GAGE WAS NOT SUCCESSFULLY ACCOMPLISHED. MAGNETIC INSP. EQUIP. HAS BEEN SUCCESSFULLY DEV. AND TESTED. | 744.0              | 220.0                   | 209.0                               | DEC 75                           | APR 78                          |
| 5 76 6654 | NOT FOR QC IN MFG OF ADVANCED FRAGMENTING STEEL SHELLS<br>A SCOPE OF WORK FOR CONTRACT SERVICES TO CONDUCT THE FY76 EFFORT HAS BEEN COMPLETED. THE PROCUREMENT ACTION HAS BEEN INITIATED AND THE CONTRACT IS EXPECTED TO BE PLACED BY SEPT. 78.   | 590.0              | 540.0                   | 9.3                                 | JAN 80                           | JAN 80                          |
| 5 77 6678 | EVALUATION OF ACQUAQUENCH UNDER PRODUCTION CONDITIONS<br>A CONTRACT WAS AWARDED TO SCRANTON RAP FOR STUDIES ON 155MM M107 AND M483 SHELLS. THE FIRST 1000 M483S HAVE BEEN QUENCHED AT CHAMBERLAIN USING AQUA QUENCH 251. QUENCH BATH HAS BEEN CHANGED TO QUALIFY TENAXOL.   | 200.0              | 176.0                   | 10.6                                | MAR 78                           | FEB 79                          |
| 5 78 6681 | PROCESS PARAMETERS FOR PRODUCTION FORMING OF PROJECTILES<br>BENET LAB HAS INITIATED WORK ON ROTARY FORMING THE 155MM M483. A PROCUREMENT PACKAGE HAS BEEN ISSUED TO PROCUREMENT FOR SQUEEZE CASTING.  | 600.0              | 9.8                     | 7.8                                 | JUN 79                           | JUN 79                          |

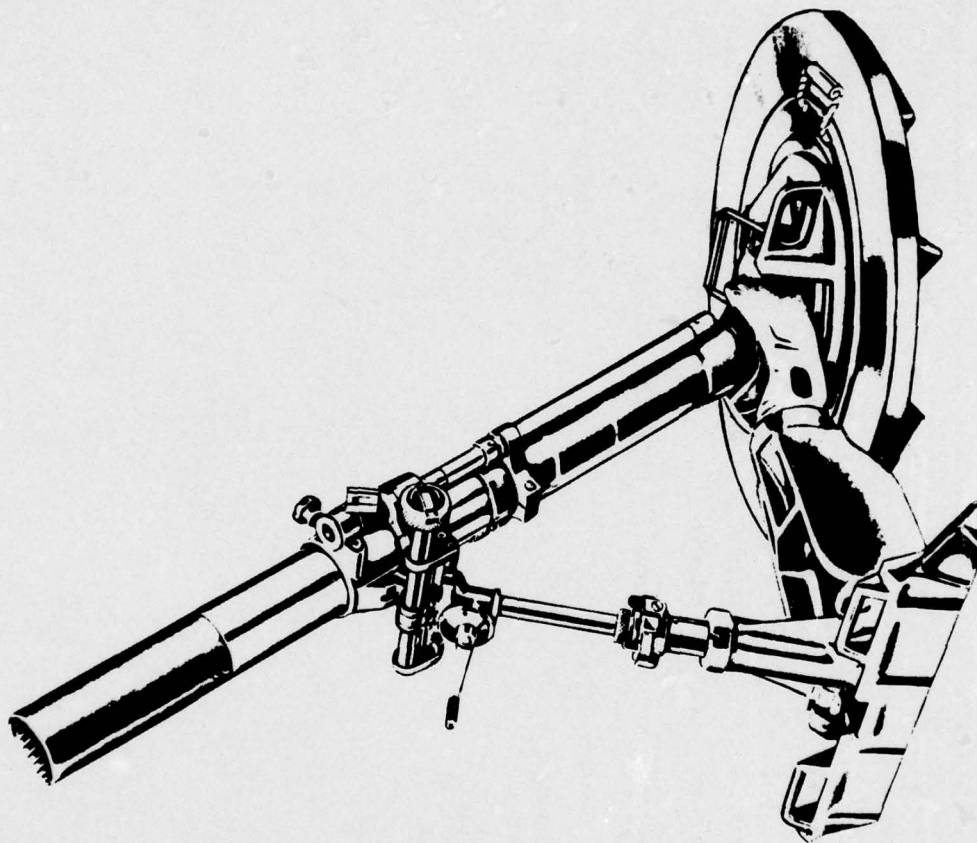


S U M M A R Y R E P O R T  
MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
1ST SEMIANNUAL SUBMISSION CY 78 RCB DRCHT-301

| PROJ NO.  | TITLE + STATUS   | AUTHOR<br>RIZED | CONTRACT<br>VALUES | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(\$000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|--|-----------------|--------------------|---|---|--|
|           |  | (8000)          | (8000)             | (8000)  |   |  |
| 5 77 6693 | PRODUCTION OF TUNGSTEN BASE ALLOY PENETRATORS FOR AP MUNIT<br>FY 78 FUNDS WILL BE TRANSFERRED TO DOE IN JULY 78.   | 527.0           | 0.0                | 0.0   | APR 78                                    | AUG 80                                   |
| 5 78 6693 | PRODUCTION OF TUNGSTEN BASE ALLOY PENETRATORS FOR AP MUNIT<br>TO EXPEDITE WORK ON THE LARGE CALIBER CORES, DOE'S V-12 FACILITY<br>WAS CONTRACTED TO PERFORM VARIOUS TASKS.   | 527.0           | 0.0                | 0.0   | AUG 79                                    | AUG 78                                   |
| 5 78 6693 | BALL PROPELLANT DETERGENT COATING-CAM RELATED<br>PLANS WERE DEVELOPED FOR A STUDY OF THE RELATIVE SIGNIFICANCE OF<br>THE VARIOUS PROCESS VARIABLES. ALSO, AN ANALYTICAL METHOD TO<br>DETERMINE THE CONCENTRATION OF DISBUTYLPHTHALATE (DBP) IN THE<br>WATER PHASES IS PLANNED. | 167.0           | 40.0               | 0.0   | AUG 80                                    | AUG 80                                   |
| 5 76 6716 | *DEV MATH MODEL- FORMING OPER FOR CURR/FUTURE ARTY MP DESIGN<br>PROJECT IS COMPLETE. A COMPUTER PROGRAM HAS BEEN WRITTEN FOR<br>ESTABLISHING OPTIMUM NOBING PARAMETERS.  | 250.0           | 94.0               | 156.0   | APR 77                                    | MAY 78                                   |
| 5 77 6716 | MATH MODEL=FORM OPERATIONS- CURRENT + FUTURE ARTY MP DESIGN<br>A NEW SCOPE OF WORK HAS BEEN IMPLEMENTED FOR CONFIRMATION TESTS<br>OF THE COMPUTER MODELING OF THE FORMING OPERATION.   | 295.0           | 137.0              | 78.5  | MAR 78                                    | NOV 78                                   |
| 5 78 6725 | AUTOMATED INERTIA BANDING MACHINE FOR ARTILLERY MUNITIONS<br>CONTRACT ACTIONS HAVE BEEN INITIATED FOR SOLE AWARD TO<br>CHAMBERLAIN MANUF, CO.  | 325.0           | 0.0                | 0.0   | APR 80                                    | APR 80                                   |
| 5 78 6736 | TECHNOL READINESS ACCEL THRU COMPUTER INTEGRATED MFG CAD/CAM<br>CRITICAL PARTS HAVE BEEN REVIEWED AND EVALUATED. THE METAL PARTS<br>DATA IS CURRENTLY BEING CLASSIFIED AND CODED IN THE GROUP<br>TECHNOLOGY DATA BASE.   | 100.0           | 24.1               | 15.9  | NOV 78                                    | NOV 78                                   |
| 5 78 6748 | SCAMP POLLUTION ABATEMENT<br>A CONTRACT WAS LET FOR THE DESIGN OF THE WASTE WATER SYSTEM FOR<br>THE SCAMP. SUPPLEMENTAL REMOVAL TECHNIQUES WILL BE NECESSARY TO<br>INSURE THAT THE OIL CONTENT IS BELOW ALLOWABLE LIMITS. DESIGN IS<br>TO BE COMPLETED BY 30 JUN 78.           | 310.0           | 10.0               | 28.3  | JAN 81                                    | JAN 81                                   |
| 5 78 6753 | METHODS F ORIENTING AND FEEDING SMALL CAL AMMO<br>A CONTRACT WAS NEGOTIATED AND AWARDED TO STUDY THE FEASIBILITY OF<br>PROCESSING THE 7.62MM CARTRIDGE CASE ON SCAMP TYPE EQUIPMENT.   | 400.0           | 333.0              | 6.6   | MAR 79                                    | MAR 79                                   |
| 5 76 6759 | FEAS F/AUTO TRANSFER=HOT FORMING PRESSES F/MORTAR AMMO<br>A CONTRACT HAS BEEN AWARDED TO MORRIS INDUSTRIES TO PURCHASE<br>TOOLING AND MANUFACTURING TIME ON A HOT FORMING PRESS.   | 132.0           | 117.0              | 8.0   | MAY 77                                    | OCT 78                                   |
| 5 78 6760 | DRYING OF LOW DENSITY BALL PROPELLANT<br>LITERATURE WAS SEARCHED IN AN ATTEMPT TO IDENTIFY SATISFACTORY<br>DRYING METHODS. VENDOR LITERATURE WAS REVIEWED. MICROWAVE AND<br>FLUID BED DRYING ARE BEING CONSIDERED. A PURCHASE ORDER FOR BALL<br>PROPELLANT WAS INITIATED.      | 118.0           | 0.0                | 0.0   | AUG 81                                    | AUG 81                                   |

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
 8 U M M A R Y P R O J E C T S T A T U S R E P O R T  
 187 SEMIANNUAL SUBMISSION CY 78 RCS DRCHT-301

| PROJ NO.  | TITLE + STATUS  | AUTHO-<br>RIZED<br>(8000) | CONTRACT<br>VALUES<br>(8000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(8000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|---|---------------------------|------------------------------|--|---|--|
|           |   |                           |                              |  |   |  |
| 5 78 6774 | MFG METHOD FOR AP08 PROJECTILE (25MM)<br>INITIATED PRELIM CONTRACT FOR DEVELOPMENT OF 25MM PROJECTILE,<br>8.0.M, DEVELOPED FOR PLASTIC SABOT. | 300.0                     | 150.0                        | 18.2   | NOV 79                                    | NOV 79                                   |
| 5 77 6777 | DEVELOPMENT OF PROD PROC- 105MM XM710E1 PROJECTILE METAL PTS<br>CONTRACTOR HAS SUBMITTED A DRAFT FINAL REPORT.                                | 500.0                     | 49.8                         | 340.9  | MAR 78                                    | JUN 78                                   |



**ARMAMENT R&D COMMAND**  
**ARMAMENT MATERIEL READINESS COMMAND**  
**(ARRADCOM, ARRCOM)**  
**(WEAPONS)**

A R R C O M - A R R A D C O M (WEAPONS)  
CURRENT FUNDING STATUS, 1ST FY78

| FISCAL YEAR | NO. OF PROJECTS | AUTHORIZED FUNDS (\$) | * ALLOCATED (\$) | * CONTRACT FUNDING EXPENDED (\$) | * INHOUSE FUNDING EXPENDED (\$) | * ALLOCATED (\$) | * INHOUSE FUNDING EXPENDED (\$) |
|-------------|-----------------|-----------------------|------------------|----------------------------------|---------------------------------|------------------|---------------------------------|
| 73          | 2               | 570,000               | 369,900          | 369,900 (100%)                   | 200,100                         | 159,900 (79%)    |                                 |
| 74          | 3               | 585,000               | 162,400          | 162,400 (100%)                   | 222,600                         | 214,400 (96%)    |                                 |
| 75          | 9               | 1,355,000             | 637,500          | 393,700 (61%)                    | 717,500                         | 662,000 (92%)    |                                 |
| 76          | 9               | 1,695,000             | 524,200          | 395,700 (75%)                    | 1,170,800                       | 1,108,800 (94%)  |                                 |
| 77          | 0               | 0                     | 0                | 0 (0%)                           | 0                               | 0 (0%)           |                                 |
| 77          | 29              | 4,329,200             | 1,531,000        | 277,900 (18%)                    | 2,797,300                       | 1,561,000 (55%)  |                                 |
| 78          | 16              | 2,272,000             | 974,300          | 0 (0%)                           | 1,297,700                       | 160,400 (12%)    |                                 |
| TOTAL       | 68              | 10,606,200            | 4,200,200        | 1,999,600 (38%)                  | 6,406,600                       | 3,866,500 (60%)  |                                 |

INHOUSE ALLOCATED 60%

CONTRACT ALLOCATED 40%

AUTHORIZED FUNDING



MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
SUMMARY PROJECT STATUS REPORT  
1ST SEMI-ANNUAL SUBMISSION CY 76 RCS DRCHT-301

| PROJ NO.  | TITLE + STATUS  | AUTHO-<br>RIZED<br>(8000) | CONTRACT<br>VALUES<br>(8000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(8000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|---|---------------------------|------------------------------|--|---|--|
| 6 76 3601 | MANUFACTURE OF FLUIDIC AMPLIFIERS BY COLD FORMING<br>PRELIMINARY PROCESS EVALUATION HAS BEEN COMPLETED AND DRAWINGS<br>HAVE BEEN MADE FOR ALL HARDWARE/PARTS TO BE FABRICATED FOR THE<br>PROJECT. TECHNICAL PACKAGES HAVE BEEN PREPARED FOR TWO SEPARATE<br>CONTRACTS, ONE FOR TOOLING AND ONE FOR PARTS FABRICATION.               | 290.0                     | 170.0                        | 92.0   | SEP 79                                    | SEP 79                                   |
| 6 74 6771 | DESIGN AND CONSTRUCT/REFINED STEP THREAD MACHINE<br>WORK HOLDING FIXTURE HAS BEEN MODIFIED FOR THE SINCH BREECH RING.<br>THE NEW INDICATING SYSTEM HAS BEEN INSTALLED. ONE PRODUCTION RING<br>HAS BEEN THREADED. A NEW CHIP SEAL IS BEING DESIGNED. A 3 MONTH<br>DELAY HAS OCCURRED.  | 195.0                     | 93.3                         | 96.7   | MAR 76                                    | SEP 78                                   |
| 6 73 7087 | APPL. OF HIGH FREQ. INDUCTION HEATING FOR HOT COIL SPRINGS<br>THE SPRING COILING EQUIPMENT HAS BEEN INSTALLED. PROBLEMS WITH<br>LOADED PINCH ROLLERS WILL DELAY THE START-UP TWO MONTHS.  | 486.0                     | 369.9                        | 78.3   | JUL 75                                    | SEP 78                                   |
| 6 75 7111 | *COMPUTER ASSISTED GRAPHICAL TECHNIQUE FOR PROD OF MEA SYS<br>THIS PROJECT IS COMPLETE. THE SOFTWARE IS NOT PERFORMING PROPERLY<br>THUS THE SYSTEM DOES NOT HAVE THE ABILITY TO PROGRAM THE<br>NECESSARY VARIETY AND COMPLEXITIES OF PARTS.   | 120.0                     | 2.5                          | 117.5  | JUN 75                                    | SEP 78                                   |
| 6 76 7201 | ARTILLERY WEAPON FIRING TEST SIMULATOR<br>TESTS OF THE IMPULSE PROGRAMMER WERE CONDUCTED WITH THE M60A2,<br>M551, M127, AND M140 GUN MOUNTS. A SPECIAL IMPACT PAD WAS<br>DESIGNED AND IS BEING BUILT FOR THE M140 GUN MOUNT. TESTING OF<br>THE IMPULSE PROGRAMMER WILL BE COMPLETED IN THE NEAR FUTURE.                             | 365.0                     | 131.0                        | 233.6  | AUG 77                                    | OCT 78                                   |
| 6 77 7201 | ARTILLERY WEAPON FIRING TEST SIMULATOR<br>A PROPOSAL HAS RECEIVED AND EVALUATED, COVERING THE ACQUISITION<br>OF A SECOND SIMULATOR. NEGOTIATIONS ARE IN PROGRESS WITH THE<br>PROSPECTIVE CONTRACTOR.  | 570.0                     | 440.0                        | 0.9  | OCT 78                                    | OCT 79                                   |
| 6 76 7203 | APPL OF LEAST COST TOLERANCES AND FINISHES TO PROD OF GUN<br>ALL TOOLING AND MACHINING TESTS TO ESTABLISH SURFACE FINISH AND<br>FINAL PART SPECIFICATION TOLERANCING HAVE BEEN COMPLETED. ALL<br>DATA HAS BEEN EVALUATED. A GUIDE FOR TOLERANCE BUILD-UP<br>RELATIONSHIPS IS BEING DEVELOPED. 95 PERCENT OF THE WORK IS<br>COMPLETE | 52.0                      | 0.0                          | 47.0   | SEP 76                                    | JUL 78                                   |
| 6 77 7213 | HIGH SPEED CHROME PLATING TECHNIQUE<br>FEASIBILITY OF HI-SPEED PLATING TECHNIQUE PROVEN. SLIPPAGE HAS<br>BEEN DUE TO LATE ARRIVAL OF FUNDS AND PROBLEMS IN OBTAINING<br>SUITABLE HIGH SPEED PUMP.   | 127.0                     | 100.0                        | 18.0   | DEC 77                                    | DEC 78                                   |
| 6 76 7236 | RAPID HEAT TREATING FOR CANNON TUBES<br>MECHANICAL PROPERTY DATA HAS BEEN DEVELOPED FOR THE SHORTER HEAT<br>TREAT SOAK TIMES. THE FINAL REPORT IS BEING PREPARED.   | 190.0                     | 25.5                         | 162.7  | DEC 76                                    | JUN 78                                   |

8 U M H A R Y P R O J E C T S T A T U S R E P O R T  
MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
1ST SEMIANNUAL SUBMISSION CY 78 RCB ORCMT-301

| PROJ NO.  | TITLE + STATUS   | AUTHORIZED<br>(8000) | CONTRACT<br>VALUES<br>(8000) | EXPENDED<br>LABOR AND<br>MATERIAL<br>(8000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|--|----------------------|------------------------------|---|---|--|
| 6 76 7261 | IMPROVEMENT MONITORING EQUIPMENT AND PROCEDURES.<br>EQUIP IMPROVEMENTS HAVE BEEN COMPLETED. TESTS INDICATE OVER A 40 PERCENT REDUCTION IN MONITORING TIME. DRIVE HEAD PROBLEMS HAVE PREVENTED TESTING OF NEW STONES. MICROGRAPHIC IS EXPECTED TO VISIT WATERVLIET IN THE NEAR FUTURE TO CORRECT THE PROBLEM. | 178.0                | 55.3                         | 111.2                                       | MAR 77                                    | NOV 78                                   |
| 6 75 7268 | IMPROVED MFG CONTROL THROUGH DATA AUTOMATION-CAM RELATED.<br>MANUALS DOCUMENTING USE OF THE SDC SYSTEM HAVE BEEN COMPLETED. TESTING OF THE SDC SYSTEM, HARDWARE AND IN-HOUSE PROGRAMS WERE COMPLETED. TRAINING AND IMPLEMENTATION OF THE SDC SYSTEM HAS INITIATED IN THREE MANUFACTURING BRANCHES.           | 172.0                | 103.0                        | 39.8  | APR 77                                    | DEC 78                                   |
| 6 77 7313 | SIMULATOR FOR PRODUCTION TESTS OF WEAPONS-CAM<br>REVISED GAIN SETTINGS FOR THE ADAPTIVE SPRING RATE CONTROL SYSTEM WERE DETERMINED AND SET INTO THE SYSTEM. ON GOING TEST PROGRAMS ON THE SIMULATOR HAS DELAYED IMPLEMENTATION.  | 205.0                | 85.0                         | 85.4  | DEC 77                                    | JUN 79                                   |
| 6 74 7332 | MFG DATA FOR OPT ELEMENTS, TOOLS + MATERIALS-CAM RELATED<br>THIS PROJECT IS APPROX 95 PERCENT COMPLETE. FINAL IMPLEMENTATION IS AWAITING RENOVATION OF FACILITIES AT FORT DIX WHERE HARDWARE SUPPORT WILL BE PROVIDED.   | 90.0                 | 0.0                          | 90.0  | DEC 74                                    | MAR 79                                   |
| 6 73 7340 | DETERMINATION/CERT OF IN-HOUSE ARMOR STEEL CASTING PROC<br>TEST PLATES AT APG ARE AWAITING BALLISTIC TESTING.  | 84.0                 | 0.0                          | 81.4  | AUG 74                                    | SEP 78                                   |
| 6 74 7410 | FINE BLANKING OF PRECISION SMALL CAL. WEAPON PART<br>PERSONNEL SHORTAGES AND TURNS OVERS HAVE PREVENTED COMPLETION OF THE ECONOMIC ANALYSIS AND FINAL REPORT FOR THIS PROJECT.   | 100.0                | 69.1                         | 27.7  | JUL 75                                    | SEP 78                                   |
| 6 75 7419 | RECIPROCATING SCREW HOLDING OF THERMOSETTING PLASTIC<br>FABRICATION OF THE HOLD IS IN PROGRESS. TRANSPARENT HOLDING PLASTIC HAS BEEN ORDERED FOR USE IN POLARISCOPE EXAMINATION OF THE PROTOTYPE HANDGUARDS. THIS METHOD IS EFFECTIVE IN STRESS CONCENTRATIONS AND IN EVALUATING PLASTIC FLOW PATTERNS.      | 45.0                 | 0.0                          | 40.5  | JUN 76                                    | DEC 78                                   |
| 6 75 7430 | FIRE CONTROL MANUFACTURE MODERNIZATION PLAN<br>TNO, AN INDUSTRIAL RESEARCH FIRM, CONTRACTED TO STUDY WAYS TO IMPROVE THE EFFICIENCY OF SMALL BATCH MANUFACTURE OF PRECISION OPTICS ELEMENTS THRU THE USE OF GROUP TECHNOLOGY. ARCON PERSONNEL WERE TRAINED IN THE 12+16 DIGIT COOLING SYSTEM.                | 300.0                | 125.0                        | 168.5                                       | JAN 76                                    | MAY 79                                   |
| 6 76 7455 | COMPUTER GENERATED MASTERS FOR GRAPHICAL FIRING TABLES<br>ALL MASTERS FOR GRAPHICAL FIRING TABLES HAVE BEEN GENERATED COMPLETING THE SET OF 8. A DRAFT OF THE FINAL REPORT HAS BEEN WRITTEN.   | 60.0                 | 0.0                          | 60.0  | DEC 76                                    | SEP 78                                   |

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
SUMMARY PROJECT STATUS REPORT  
1ST SEMIANNUAL SUBMISSION CY 78 RCS DRCHT-301

| PROJ NO.  | TITLE + STATUS  | AUTHORIZED<br>(\$000) | CONTRACT<br>VALUES<br>(\$000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(\$000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|---|-----------------------|-------------------------------|---|---|--|
| 6 75 7460 | *ELECTROCHEMICAL MACHINING APPLIED TO DEBURRING + SHAPING<br>AN ELECTROCHEMICAL MACHINING SYSTEM FOR THE FABRICATION OF MORTIZER<br>RECOIL MECHANISMS WAS DESIGNED, BUILT, TESTED, AND DELIVERED TO<br>ROCK ISLAND ARSENAL.   | 100.0                 | 95.9                          | 44.1  | FEB 76                                    | JUN 78                                   |
| 6 77 7485 | APPLICATION OF CHEMICAL PROCESSES TO IMPROVE SURFACE FINISH<br>HOLDING-PROCESSING FIXTURE FOR 105MM SINCH SPECIMEN HAS<br>COMPLETED. SEVERAL SPECIMENS WERE MACHINED. SOLUTION FEED SYS<br>WILL BE MODIFIED DUE TO FLOW PROBLEMS. EXCELLENT RESULTS WERE<br>OBTAINED IN MODIFYING THE LAND CONFIGURATION TO A ROUNDED CORNER.     | 147.0                 | 0.0                           | 121.4   | FEB 78                                    | OCT 78                                   |
| 6 75 7532 | SINGLE DT CUTTING FOR METAL + PLASTIC OPTICS<br>PNEUMO PRECISION IS FAB AN ULTRA PRECISION MILLING MACH. THE MACH<br>IS DESIGNED FOR SINGLE POINT DIAMOND TOOL CUTTING.   | 140.0                 | 94.1                          | 36.0  | JUN 76                                    | JUL 80                                   |
| 6 75 7550 | *PROTOTYPE OF PRODUCTION ELECTRO-SLAG REFINING FACILITIES<br>PROJECT IS COMPLETE. IT RECOMMENDS THAT HOLLOW PREFORMS BE<br>INCORPORATED INTO THE NEXT 105MM M48 PREFORM RFG.  | 250.0                 | 110.5                         | 139.0   | JUN 76                                    | JUN 78                                   |
| 6 75 7555 | DYNAMIC PRESSURE STAND, SLIDE BLOCK BREECH MECHANISMS<br>DYNAMISTATOR HAS BEEN INSTALLED AND DEBURRED. DYNAMIC<br>PRESSURIZATION STAND IS NEARLY COMPLETE, WITH REMAINDER OF STAND<br>TO BE PURCHASED UNDER FOLLOW ON PROJECT 6 79 7555.  | 96.0                  | 49.5                          | 20.6  | NOV 76                                    | AUG 78                                   |
| 6 76 7560 | PILOT AUTO SHOP LOADING AND CONTROL SYSTEMS CAM<br>DESIGN SPECIFICATIONS WERE DEVELOPED FOR ALL PRIORITY PLANNING,<br>CAPACITY PLANNING, CAPACITY CONTROL, AND SHOP FLOOR CONTROL<br>INPUTS AND OUTPUTS. PROGRAMMING WAS INITIATED ON MANY OF THE SHOP<br>FLOOR APPLICATIONS.   | 280.0                 | 230.5                         | 26.0  | SEP 78                                    | SEP 79                                   |
| 6 76 7582 | *PROCESS FOR FABRICATING 81-DENSITY RUBBER WPN COMPONENTS<br>NO STATUS REPORT WAS RECEIVED. PAST REPORTS HAVE SHOWN THAT ALL<br>THE FUNDS HAVE BEEN SPENT BUT PROJECT FOLLOW-UP AND FINAL 301 IS<br>DELINQUENT BECAUSE OF THE ARMCOM-ARRADCON FORMATION. IN THE ARMCOM<br>SPLIT THIS PROJECT DID NOT MAKE AN ORDERLY TRANSITION.  | 50.0                  | 0.0                           | 50.0  | JUL 77                                    | SEP 78                                   |
| 6 76 7588 | *ROTARY FORCE INTEGRATED PROD TECHNOLOGY<br>A FINAL REPORT HAS BEEN DRAFTED.  | 420.0                 | 81.9                          | 388.3   | JUN 77                                    | JUL 78                                   |
| 6 77 7588 | ROTARY FORCE INTEGRATED PRODUCTION TECHNOLOGY<br>A TECHNIQUE TO MINIMIZE QUENCH CRACKING HAS BEEN ESTABLISHED.  | 100.0                 | 5.1                           | 109.1   | OCT 78                                    | OCT 78                                   |
| 6 75 7589 | AUTO TARGETING SYS FOR PRODUCTION TEST OF AUTO WPN + AMMO<br>EQUIP ON CONTR EXPECTED IN ON 11/01/78. CONTR EXTENDED THRU DEC<br>78 TO ASSURE SERVICE OUR INSTALLATION AND CHECKOUT. TRANSDUCER<br>SIGNAL CORRELATION WITH TRUE IMPACT POSN IS STILL PROBLEMATIC.<br>PROJECT DID NOT CONSIDER ELECTRONIC APPROACH TO SOLVE PROBLEM | 130.0                 | 95.0                          | 26.4  | SEP 76                                    | MAR 79                                   |

S U M M A R Y P R O J E C T S T A T U S R E P O R T  
MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
1ST SEMIANNUAL SUBMISSION CY 78 RCB DRCHT-301

| PROJ NO.  | TITLE + STATUS  | AUTHO-<br>RIZED<br>(8000) | CONTRACT<br>VALUES<br>(8000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(8000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|---|---------------------------|------------------------------|--|---|--|
| 6 77 7614 | APPLN OF RAPID PLATING BY ABRASIVE PARTICLE FLOW.<br>NEW METHODS OF INDUCING RAPID PARTICLE FLOW WERE STUDIED. A<br>CONTRACT WITH BATTELLE HAS BEEN AWARDED TO CONTINUE THE WORK.   | 115.0                     | 45.2                         | 50.5   | APR 78                                    | APR 79                                   |
| 6 77 7644 | APPLICATION OF INTEGRAL COLOR ANODIZE FOR ALUMINUM<br>EVALUATION OF WEARABILITY, CORROSION RESISTANCE, COLOR, AND COLOR<br>RETENTION CONTINUED. PROCUREMENT ACTION IS IN PROCESS TO OBTAIN<br>HARDCOATING APPARATUS FOR FURTHER EVALUATIONS. ALUM ALLOYS HAVE<br>BEEN EVALUATED AND M-16 UPPER RECEIVER EVAL HAS BEGUN. | 75.0                      | 0.0                          | 25.4   | APR 78                                    | JAN 79                                   |
| 6 76 7647 | *PROCESS FOR MANUFACTURING SHAGING HANDRELS FOR GUN BARRELS<br>VARIOUS EQUIP DESIGNS AND MODELS WERE TESTED AND A SYSTEM<br>SELECTED FOR THE MANUFACTURING OF GUN-BARREL SHAGING HANDRELS.  | 100.0                     | 0.0                          | 100.0  | DEC 76                                    | JUN 78                                   |
| 6 77 7649 | COMPUTERIZED POWDER METALLURGY FORGING DESIGN-CAM<br>COMPUTER PROGRAMING IS CONTINUING AS WELL AS EXPERIMENTAL DATA<br>COLLECTION.  | 100.0                     | 57.8                         | 17.0   | MAY 78                                    | AUG 78                                   |
| 6 78 7649 | COMPUTERIZED POWDER METALLURGY FORGING DESIGN-CAM<br>INITIATION OF THE SECOND YEAR'S EFFORT IS AWAITING COMPLETION OF<br>THE FIRST YEAR'S EFFORT.   | 102.0                     | 0.0                          | 0.0  | AUG 79                                    | AUG 79                                   |
| 6 77 7650 | FAB-RUBBER END ITEM USING MICROWAVE EGYPT<br>THE MICROWAVE OVEN WAS EXAMINED AND HAS SHOWN TO BE SAFE. TEST<br>RESULTS ON TEST SPECIMENS INDICATE A NONLINEAR RELATIONSHIP<br>BETWEEN COMPONENT THICKNESS AND CURE TIME TO 290 DEGREES F.<br>DIMENSIONAL EXAMINATIONS ARE IN PROGRESS.                                  | 50.0                      | 0.0                          | 30.8   | JUN 78                                    | FEB 79                                   |
| 6 77 7652 | COOLANT-CHIP EJECTOR, MULTI-OPERATION TOLLING<br>TOOLING HAS BEEN REQUISITIONED.  | 65.0                      | 40.0                         | 15.5   | AUG 78                                    | FEB 79                                   |
| 6 77 7655 | APPLICATION - THERMOARC SPRAY WEAR COATINGS<br>WORK HAS BEEN COMPLETED ON BOND STRENGTH DETERMINATION OF ARC<br>SPRAYED AND THERMO SPRAYED ALUMINUM BRONZE.   | 70.0                      | 40.9                         | 17.9   | MAR 78                                    | JUL 78                                   |
| 6 78 7655 | APPLICATION - THERMOARC SPRAY WEAR COATINGS<br>SEE 5777655.   | 62.0                      | 0.0                          | 0.0  | AUG 78                                    | AUG 78                                   |
| 6 77 7707 | AUTOMATED PROCESS CONTROL FOR MACHINING SCANI<br>A CONTRACT WAS NEGOTIATED AND MACHINABILITY TEST STARTED. THE<br>MATRICES FOR HANDLING DATA WERE DESIGNED. THE MACHINING TESTS<br>WILL CONTINUE WITH THE RESULTS BEING APPLIED.  | 105.0                     | 40.7                         | 20.9   | OCT 78                                    | FEB 79                                   |
| 6 78 7710 | INJECTION HOLDING OF RUBBER OBSTURATOR PADS<br>EQUIPMENT ASSESSMENTS WERE CONDUCTED, AND RESULTED IN THE<br>ORDERING OF 2 PROCESS CONTROLS FOR A 48-OUNCE LEWIS INJECTION<br>MACHINE. A FEASIBILITY STUDY WAS INITIATED TO DETERMINE WHETHER A<br>SPARE COMPRESSION MOLD CAN BE CONVERTED TO AN INJECTION MOLD.         | 77.0                      | 0.0                          | 2.8  | JUL 78                                    | JUL 79                                   |



S U M M A R Y P R O J E C T S T A T U S R E P O R T  
1ST SEMI-ANNUAL SUBMISSION CY 78 RCH DRCHT-301

| PROJ NO.  | TITLE + STATUS   | AUTHO-<br>RIZED<br>(\$000) | CONTRACT<br>VALUES<br>(\$000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(\$000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|--|----------------------------|-------------------------------|---|---|--|
|           |  |                            |                               |   |   |  |
| 6 77 7711 | ELECTROPOLISHING PROCESS MODELS FOR SMALL BORE WEAPONS<br>ELECTROPOLISHING EVALUATIONS MADE ON SMOOTH BORE M-11 STEEL TUBES<br>INDICATED THE IMPORTANCE OF TUBE POSITIONING IN ESTABLISHING THE<br>DESIRED TAPER.  | 75.0                       | 0.0                           | 44.1  | FEB 78                                    | AUG 78                                   |
| 6 77 7714 | MULTI-MODE WEAPON- MOUNT IMPEDANCE SIMULATOR (CAM)<br>A CONTRACT WILL BE AWARDED IN AUG 78, AFTER APPROVAL OF<br>CONTRACTOR DESIGN, THE SIMULATOR WILL BE FABRICATED AND<br>INSTALLED.   | 289.0                      | 230.0                         | 22.5  | OCT 79                                    | JUL 80                                   |
| 6 77 7715 | APPLICATION OF CONTROLLED-FORCE MACHINING<br>THE ASSEMBLY OF THE ADAPTIVE CONTROL UNIT WAS COMPLETED BY<br>MACOTECH. CONTROL UNIT WAS INSTALLED ON HYDROTEL MILLING MACHINE<br>AT RIA. SOFTWARE ROUTINE WAS PUT INTO RIA M/C COMPUTER AND<br>VERIFIED.   | 64.0                       | 30.5                          | 21.9  | JUN 78                                    | DEC 78                                   |
| 6 77 7716 | PROTOTYPE PROD LINE FOR PRESSURE PHOSPHATE COATINGS<br>EFFORTS ARE BEING MADE TO PROCURE SYSTEM HARDWARE. PLANS FOR<br>MODIFYING THE CHEMISTRY OF THE MANGANESE PHOSPHATE TO REDUCE<br>SLUDGE AND INCREASE PROCESSING RATES ARE BEING MADE.              | 115.0                      | 70.0                          | 34.6  | APR 78                                    | DEC 79                                   |
| 6 78 7716 | PROTOTYPE PROD LINE FOR PRESSURE PHOSPHATE COATINGS<br>SEE 677716.   | 77.0                       | 0.0                           | 0.0   | DEC 79                                    | DEC 79                                   |
| 6 77 7720 | FABRICATION METHODS FOR 2 AND 3 WIRE MESH SPRINGS<br>STAINLESS STEEL MESH SPRINGS WERE DESIGNED AND FABRICATED. DRAFT<br>REPORT OF PROCEDURES WAS INITIATED. PROGRESS ON PROJECT DELAYED<br>DUE TO RELOCATION OF SPRING TEST EQUIP FROM RIA TO ARRADCOM. | 50.0                       | 0.0                           | 42.0  | JAN 78                                    | MAR 79                                   |
| 6 77 7722 | IMPLEMENTATION OF THE 8 INCH XM201 ON ROTARY FORGE LINE<br>THE MC PROGRAM FOR FORGING WAS DEVELOPED. THE HEAT TREAT<br>PARAMETERS WERE FINALIZED.  | 248.0                      | 41.3                          | 99.2  | MAY 78                                    | OCT 78                                   |
| 6 77 7726 | ROT FORGE INTER PDN TECH BY COLD + WARM FORG W/NEW PREFORMS<br>ADDITIONAL PREFORMS FOR WARM ROTARY FORGING ARE BEING PROCURED.   | 592.0                      | 177.4                         | 218.3   | MAY 79                                    | MAY 79                                   |
| 6 77 7727 | RECYCLING OF SCRAP GUN TUBES BY ROTARY FORGING<br>TWO 155MM M165 AND TWO 105MM M68 ROTARY FORGE PREFORMS WERE<br>MACHINED FROM THREE SCRAPPED 8 INCH M2A2 TUBES.   | 224.0                      | 9.2                           | 91.8  | AUG 78                                    | AUG 78                                   |
| 6 77 7733 | ELIMINATION OF EXTERIOR TUBE MACHINING PRIOR TO SWAGE AUTO.<br>STRESS ANALYSIS WORK COMPLETED. MUZZLE CLAMPS HAVE BEEN DESIGNED<br>AND FABRICATED. DELAY HAS BEEN ENCOUNTERED DUE TO PRODUCTION<br>SCHEDULING.   | 47.0                       | 1.8                           | 37.7  | MAR 78                                    | DEC 78                                   |

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
S U M M A R Y P R O J E C T S T A T U S R E P O R T  
1ST SEMIANNUAL SUBMISSION CY 78 RCB DRCHT-301

| PROJ NO.  | TITLE + STATUS   | AUTHOR-<br>RIZED | CONTRACT<br>VALUES | EXPENDED<br>LABOR AND<br>MATERIAL<br>(8000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|--|------------------|--------------------|---|---|--|
| 6 77 7741 | IMPR INST/INSPECT ANGLE + LINEARITY OF F C INSTS<br>DECILOG INC. SUBMITTED PRELIMINARY INSTRUCTIONS FOR ASSEMBLY,<br>ALIGNMENT AND TESTING OF THE SIREPRINGENT ANGULAR ALIGNMENT<br>SENSOR. REVIEW OF INSTRUCTIONS AND EVALUATION OF DESIGN FOR<br>PROTOTYPE ALIGNMENT/CALIBRATION FUTURE WAS BEGUN.       | 130.0            | 58.0               | 39.0  | APR 78                                    | APR 79                                   |
| 6 78 7741 | IMPR INST/INSPECT ANGLE + LINEARITY OF F C INSTS<br>A BREADBOARD TEST SETUP WILL BE ASSEMBLED TO ACCUMULATE DATA TO<br>SEE WHETHER A CONTINUATION WILL BE USEFUL.  | 54.0             | 0.0                | 10.2  | DEC 79                                    | DEC 79                                   |
| 6 77 7742 | SPOT CURING PRECISION OPTICAL ASSEMBLIES<br>ARRADCOM OPTICS SHOP BONDED DOUBLETS USING TWO COMMERCIAL<br>UV-CURING CEMENTS. THEY REQUIRE ONLY TWO MINUTE CURE IN THE<br>FIXTURE AND TWO MINUTES OUT. THEY WITHSTOOD 85 DEG FOR FIVE<br>HOURS OK.   | 60.0             | 0.0                | 60.0  | APR 78                                    | JUL 78                                   |
| 6 78 7743 | APPLICATION OF ANTI-FOG CONDUCTIVE FILMS<br>COATINGS WERE SELECTED AND DEPOSITED BY ELECTRON BEAM<br>EVAPORATION. SATISFACTORY RESULTS WERE OBTAINED USING OXIDES OF<br>TIN AND INDIUM. RF SPUTTERING AND ION PLATING ARE BEING STUDIED.<br>COATINGS MUST BE CONDUCTIVE AND TRANSPARENT.                   | 70.0             | 0.0                | 36.2  | FEB 79                                    | FEB 79                                   |
| 6 77 7744 | IMPROVED MFG PARAMETERS FOR OPTICS<br>ARRADCOM OPTICS SHOP REVIEWED MIL SPEC D-13830 TO IDENTIFY<br>PARAGRAPHS NEEDING REVISION. THE SPEC IS NOT UP TO DATE. OUTSIDE<br>FIRMS WILL WORK ON SCRATCH AND DIG STANDARDS AND MODULATION<br>TRANSFER FUNCTION TESTERS.  | 105.0            | 0.0                | 112.6                                       | APR 78                                    | JUL 78                                   |
| 6 77 7745 | DIAMOND TOOL FABRICATION CAPABILITY<br>A DIAMOND PELLET TOOL HAS BEEN DESIGNED. THREE LENSES HAVE BEEN<br>SELECTED FOR TOOL EVALUATION. SINCE SHOP FACILITIES NECESSARY FOR<br>THE ACCOMPLISHMENT OF THIS PROJECT HAVE NOT BEEN RELOCATED FROM<br>FRANKFORD ARSENAL, IT MAY BE NECESSARY TO USE CONTRACTOR | 112.0            | 0.0                | 36.3  | MAR 78                                    | MAR 79                                   |
| 6 77 7746 | IMPRV DURABILITY HIGH EFFICIENCY REFLECT FILMS<br>ADHERENCE OF SILVER FILM TO GLASS WAS IMPROVED. HIGHLY REFLECTIVE<br>METAL ALLOYS WERE EVALUATED. ENHANCED ALUMINUM COATINGS WERE<br>PRODUCED AND EVALUATED. DIELECTRIC MIRRORS WERE PRODUCED MORE<br>EFFICIENTLY USING FEWER COATING LAYERS.            | 89.0             | 0.0                | 56.4  | MAY 78                                    | DEC 78                                   |
| 6 77 7747 | INJECTION MOLDED PLASTIC FOAMS FOR SMALL ARMS APPL<br>***** DELINQUENT STATUS REPORT *****   | 70.0             | 0.0                | 0.0   |   | SEP 78                                   |
| 6 78 7802 | ESTABLISH RCM TOOL PERFORMANCE SPECS<br>PRESENT PROCEDURES WERE REVIEWED AND GOALS WERE ESTABLISHED.   | 105.0            | 145.0              | 13.6  | DEC 79                                    | DEC 79                                   |

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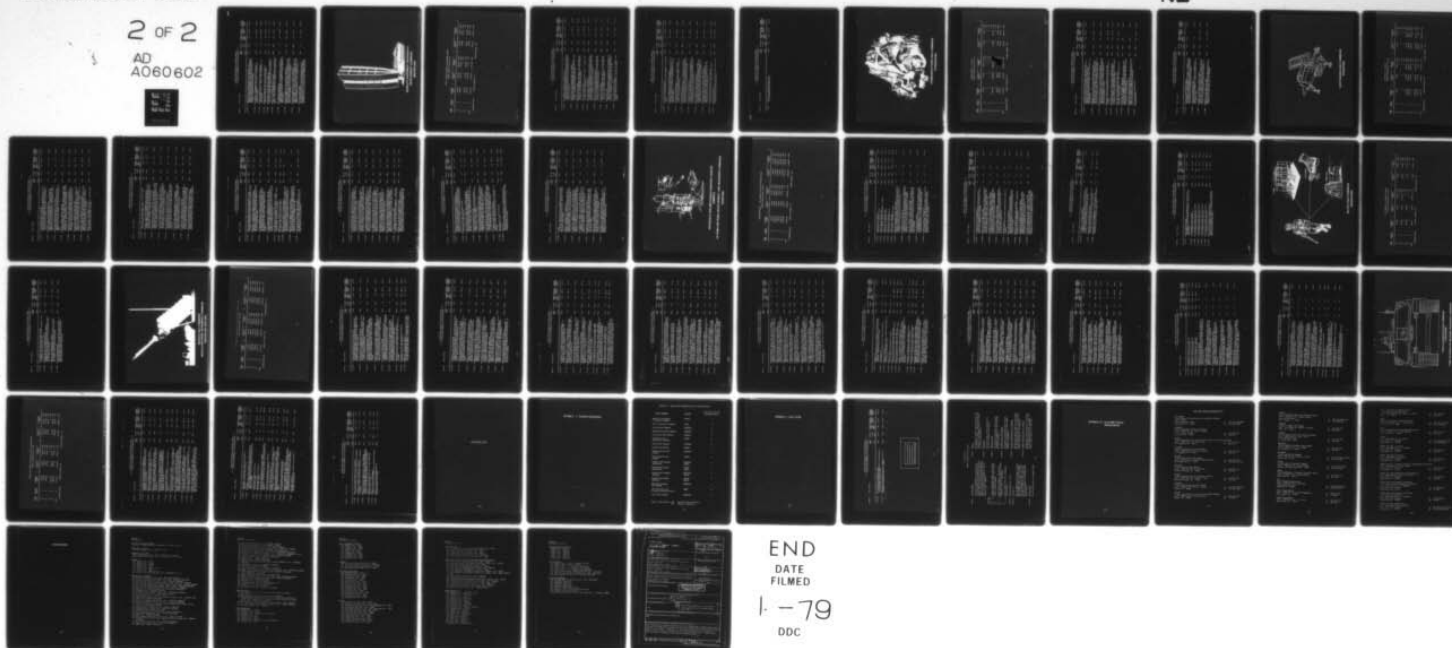
ARMY INDUSTRIAL BASE ENGINEERING ACTIVITY ROCK ISLAND IL F/G 5/2  
MANUFACTURING METHODS AND TECHNOLOGY PROGRAM PROJECT STATUS REP--ETC(U)  
OCT 78 H E WEIDNER, L S HANCOCK

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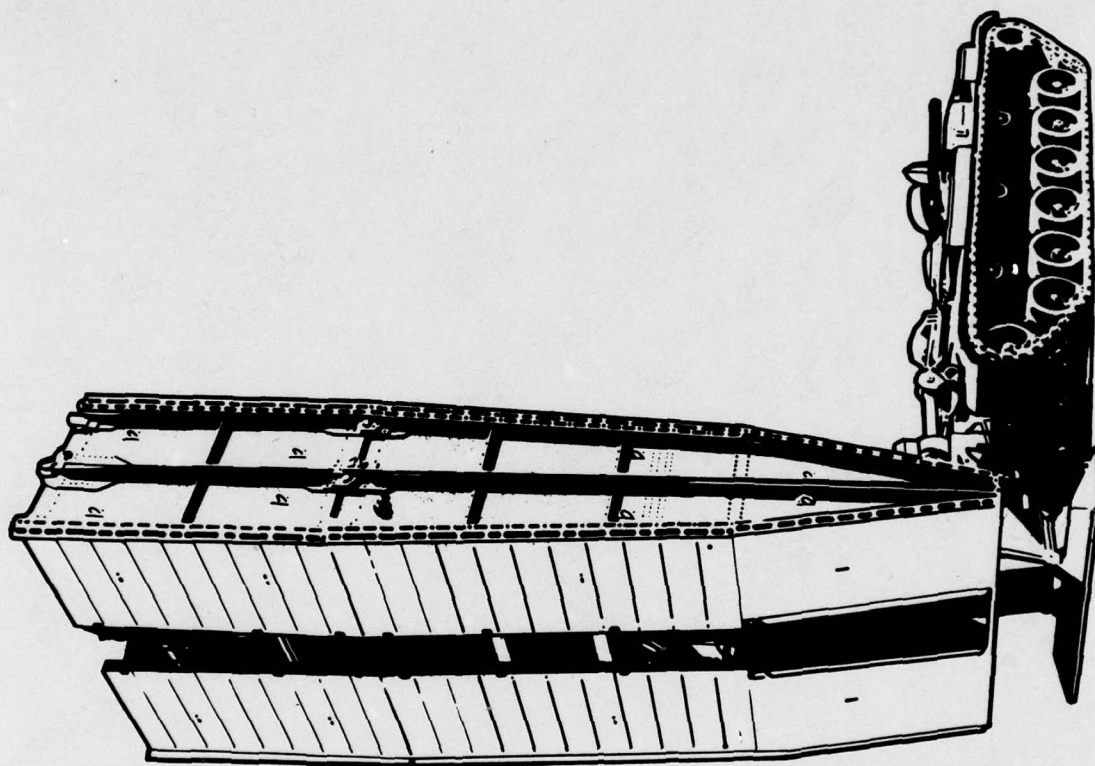
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S U M M A R Y P R O J E C T S T A T U S R E P O R T  
187 SEMIANNUAL SUBMISSION CY 78 RCS DRMT-301

| PROJ NO.  | TITLE + STATUS   | AUTHOR-<br>RIZED<br>(8000) | CONTRACT<br>VALUES<br>(8000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(8000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|--|----------------------------|------------------------------|--|---|--|
| 6 78 7807 | PROGRAMMED OPTICAL SURFACING EQUIP AND METHODOLOGY (CAM)<br>RECENT INNOVATIONS FOR DIAMOND MILLING AND GENERATING TECHNIQUES<br>HAVE BEEN REVIEWED TO DETERMINE THE BEST TECHNIQUE FOR PRODUCING<br>SPHERICAL OPTICS. A SPECIFICATION DELINEATING THE CHAR AND<br>PERFORMANCE REQUIREMENT IS BEING PREPARED.               | 134.0                      | 100.0                        | 10.8   | DEC 79                                    | DEC 79                                   |
| 6 78 7808 | LEAK DETECTION TECHNIQUES FOR SMALL SEALED FIRE CON ASSM<br>A TEST PLAN HAS DEVELOPED. AVAILABILITY OF COMMERCIAL LEAK<br>DETECTORS HAS BEGUN.   | 86.0                       | 0.0                          | 12.0   | APR 79                                    | APR 79                                   |
| 6 77 7814 | SYNTHETIC QUENCHANT FOR HEAT TREATING WEAPON COMPONENTS<br>A LAB QUENCHING FACILITY IS BEING PLANNED. SOME EQUIPMENT HAS<br>BEEN RECEIVED.   | 67.0                       | 0.0                          | 37.4   | FEB 78                                    | SEP 78                                   |
| 6 78 7814 | SYNTHETIC QUENCHANT FOR HEAT TREATING WEAPON COMPONENTS<br>PRELIMINARY QUENCHING TRIALS HAVE BEEN INITIATED.   | 51.0                       | 0.0                          | 1.8  | JUN 79                                    | JUN 79                                   |
| 6 78 7825 | ELIMINATION OF FACILITATING MONING OPERATIONS<br>WORK ORDERS HAVE BEEN PREPARED COVERING MACHINE AND DESIGN TIME<br>WHICH WILL BE NEEDED ONCE A BORING MACHINE IS MADE AVAILABLE.  | 133.0                      | 0.0                          | 2.0  | JUN 79                                    | JUN 79                                   |
| 6 78 7840 | PORTABLE MULTI-DEGREE-OF-FREEDOM SIMULATOR<br>WORK HAS BEGUN ON PREPARING THE SCOPE-OF-WORK FOR THE CONTRACTUAL<br>EFFORT. IT IS ANTICIPATED THAT A CONTRACT CAN BE AWARDED BY DEC<br>78.  | 389.0                      | 330.0                        | 12.0   | JUN 80                                    | JUN 80                                   |
| 6 78 7844 | ROOM TEMPERATURE PHOSPHATING<br>A LITERATURE SURVEY HAS BEEN COMPLETED REVEALING A PROBLEM OF<br>EXCESS SLUDGING. FUTURE WORK WILL ADDRESS THE CONTROL OF SLUDGING<br>CAUSED BY NITRITE ADDITIONS TO THE BATH. A LAB SCALE OPERATION IS<br>BEING PREPARED.   | 37.0                       | 0.0                          | 3.4  | SEP 78                                    | SEP 78                                   |
| 6 77 7903 | ANALYSIS FOR MODERNIZATION OF INDUSTRIAL OPERATIONS<br>CONTRACT AWARDED TO A T KEARNEY. PHASE I APPLV EXPECTED IN JUL<br>78. IN HOUSE EFFORT INCL MFG WORKLOAD AND IPE CONDITION ANALYSIS.<br>PRIOR ANALYSIS IS USING 15 TO 30 POTENTIAL END ITEMS AND WILL BE<br>USED FOR COND ASSESSMENT. PGM TIME HAS BEEN COMPRESSED.  | 147.2                      | 46.0                         | 94.2   | FEB 78                                    | NOV 78                                   |
| 6 78 7901 | ANALYSIS FOR MODERNIZATION OF INDUSTRIAL OPERATIONS<br>CONTRACT AWARDED A T KEARNEY. SYSTEMS AND PROCEDURES INPUT WILL<br>IMPACT EQUIPMENT AND FACILITIES PLAN AND VICE VERSA DURING THE<br>CURRENCY EFFORT ALSO VIEWED AS A SYSTEMS INTEGRATION PLAN AND FOR<br>CHECKING AND CORRECTING OR FINE TUNING THE PRIOR 2 PLANS. | 433.0                      | 229.3                        | 3.0  | JUN 79                                    | JUN 79                                   |
| 6 78 8017 | POLLUTION ABATEMENT PROGRAM<br>CML ANALYSIS OF DERUSTING AND PLATING SOLNS USED AT RIA HAS<br>CONDUCTED. SOURCES OF NON-CYANIDE CHLS CAPABLE OF PRODUCING<br>COATINGS EQUAL TO THAT OF CYANIDE PLATING PROCESSES. SUPPLIERS<br>HAVE BEEN CONTACTED. NEW PLATING EQUIPMENT IS BEING INSTALLED.                              | 82.0                       | 0.0                          | 0.0  | APR 79                                    | APR 79                                   |





**MOBILITY EQUIPMENT RESEARCH &  
DEVELOPMENT COMMAND  
(MERADCOM)**

# MOBILITY EQUIPMENT RESEARCH AND DEVELOPMENT COMMAND

CURRENT FUNDING STATUS, 1ST FY78

| FISCAL YEAR        | NO. OF PROJECTS | AUTHORIZED FUNDS (\$) | CONTRACT FUNDS ALLOCATED (\$) | CONTRACT FUNDS EXPENDED (\$) | INHOUSE FUNDS ALLOCATED (\$) | INHOUSE FUNDS EXPENDED (\$) |
|--------------------|-----------------|-----------------------|-------------------------------|------------------------------|------------------------------|-----------------------------|
| 75                 | 2               | 308,000               | 233,000                       | 233,000 (100%)               | 72,000                       | 72,000 (100%)               |
| 76                 | 5               | 1,488,000             | 1,130,200                     | 1,130,200 (100%)             | 358,800                      | 184,400 (51%)               |
| 77                 | 0               | 0                     | 0                             | 0 (0%)                       | 0                            | 0 (0%)                      |
| 77                 | 4               | 786,000               | 540,300                       | 347,200 (64%)                | 248,700                      | 48,800 (18%)                |
| 78                 | 8               | 1,737,000             | 1,127,800                     | 67,000 (5%)                  | 609,200                      | 84,900 (13%)                |
| TOTAL              | 19              | 4,313,000             | 3,031,300                     | 1,777,400 (58%)              | 1,281,700                    | 387,100 (30%)               |
| AUTHORIZED FUNDING |                 |                       | CONTRACT ALLOCATED 70%        |                              | INHOUSE ALLOCATED 20%        |                             |

S U M M A R Y P R O J E C T S T A T U S R E P O R T  
1ST SEMIANNUAL SUBMISSION CY 76 HCS ORCMT=301

| PROJ NO.  | TITLE + STATUS   | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|-----------|--|--------------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| 7 75 3508 | *DRY COMPOSITE MEMBRANE FOR REVERSE OSMOSIS<br>THIS PROJECT DEVELOPED TECHNIQUES AND EQUIPMENT FOR THE QUANTITY PRODUCTION OF WET/DRY REVERSIBLE DRY CELLULOSE-TYPE RU MEMBRANE MODULES SUITABLE FOR USE IN THE MILITARY MULTI-PURPOSE WATER PURIFICATION EQUIPMENT.                     | 140.0              | 83.0                    | 97.0                                | JUN 76                           | SEP 78                          |
| 7 76 3509 | PRODUCTION TECHNOLOGY FOR SELF-LUMINOUS LIGHT SOURCES<br>SELF-LUMINOUS LIGHT SOURCES ARE BEING EVALUATED FOR LIFE EXPECTANCY. THE PRODUCTION EQUIPMENT LOCATED AT TOUOLE ARMY DEPOT IS BEING TRANSFERRED TO LETTERKENNEY ARMY DEPOT.   | 100.0              | 15.0                    | 6.9                                 | DEC 77                           | DEC 78                          |
| 7 76 3552 | *MOLTEN SALT LI/CL BATTERY<br>PROJECT WORK WAS COMPLETED DURING FIRST CY 76. FINAL REPORT WAS WRITTEN BUT NEVER SUBMITTED. FINAL REPORT HAS NOW BEEN RECEIVED AND PROJECT WILL BE REPORTED AS COMPLETED.   | 700.0              | 700.0                   | 0.0                                 | APR 77                           | SEP 78                          |
| E 78 3532 | MOLTEN SALT LI/CL BATTERY<br>ONE CELL OF MORE THAN 340 AH HAS BEEN CYCLED AT A CURRENT DRAIN 1.5 TIMES THE ARMY REQUIREMENT.   | 120.0              | 105.0                   | 3.0                                 | SEP 78                           | DEC 78                          |
| 7 76 3551 | THIN FILM COMPOSITE REINFORCEMENT.<br>COMPOSITE FILMS OF TITANIUM/ALUMINUM, SILICON CARBIDE/ALUMINUM, AND ALUMINA/ALUMINUM WERE FABRICATED. THE TITANIUM/ALUMINUM FILM EXHIBITED A TENSILE STRENGTH OF 540K PSI. THE MODULI OF THE FILMS WERE NOT MEASURED. FILM ISOLATION IS A PROBLEM. | 200.0              | 151.4                   | 4.3                                 | JUL 77                           | DEC 78                          |
| 7 75 3552 | *IMPROVED ALUMINUM ALLOY WELDING FILLER METALS<br>PROJECT WORK WAS COMPLETED DURING FIRST CY 76. FINAL REPORT WAS WRITTEN BUT NEVER SUBMITTED. FINAL REPORT HAS NOW BEEN RECEIVED AND PROJECT WILL BE REPORTED AS COMPLETED.   | 185.0              | 150.0                   | 15.0                                | MAR 76                           | JUN 76                          |
| 7 76 3580 | *FUEL CELL STACK PRODUCTION<br>PROJECT WORK WAS COMPLETED DURING FIRST CY 77. FINAL REPORT WAS WRITTEN BUT NEVER SUBMITTED. FINAL REPORT HAS NOW BEEN RECEIVED AND PROJECT WILL BE REPORTED AS COMPLETED.  | 235.0              | 193.8                   | 41.2                                | SEP 76                           | JUN 77                          |
| E 78 3587 | SLURFAC ROCKET MOTOR<br>SMALL EXPERIMENTAL BATCHES OF THE PROPELLANT MIX WERE TESTED AND VISCOSITY-TEMPERATURE MEASUREMENTS MADE WHILE OBSERVING THE PROPELLANT GEL BEHAVIOUR. ITS SUSPECTED THAT PUT LIFE VARIABILITY OF THE MIX IS CAUSED BY IMPURITIES IN THE ALUM, OXIDE.            | 210.0              | 200.0                   | 6.2                                 | AUG 79                           | AUG 79                          |
| E 77 3588 | SLURFAC MINE NEUTRALIZER LAUNCHER<br>ALCOA HAS SUCCESSFULLY DEMONSTRATED A METHOD FOR PRODUCING CLOSE TOLERANCE LARGE DIAMETER TUBES BY A DRAWING, COLD WORKED, PROCESS.   | 50.0               | 41.7                    | 8.3                                 | OCT 77                           | OCT 77                          |

S U M M A R Y P R O J E C T S T A T U S R E P O R T  
1ST SEMI-ANNUAL SUBMISSION CY 78 HCB DRMT-301

| PROJ NO.  | TITLE + STATUS  | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|-----------|---|--------------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| E 78 3588 | SLUFAE MINE NEUTRALIZER LAUNCHER<br>THE CONTRACTOR IS PREPARING TEST FIXTURES NECESSARY TO BURST TEST TUBES.  | 109.0              | 30.0                    | 3.7                                 | APR 79                           | APR 79                          |
| E 77 3589 | *MAN PORT MTL RERADON RADAR ANTENNAS AND FILTERS<br>PROJECT WAS TERMINATED AND 140K WAS REPROGRAMMED TO MACI PROJECT E 79 3579. TERMINATION WAS DUE TO THE CANCELLATION OF THE DEVELOPMENT EFFORT OF THE PORTABLE LONG RANGE DETECTOR OF METAL OBJECTS (PLORNUDB).                            | 30.0               | 0.0                     | 30.0                                | SEP 79                           | JUN 78                          |
| E 77 3592 | IMPROVED GRAPHITE REINFORCEMENT<br>AN ARCPULSMA HEATING FACILITY WAS BUILT, FIBERS HAVE BEEN PREPARED HAVING TENSILE STRENGTHS IN THE REGION OF 473K PSI AND MODULI IN THE 63 MILLION PSI REGION.   | 206.0              | 137.3                   | 7.5                                 | SEP 78                           | DEC 78                          |
| E 78 3604 | SOLID STATE POWER SWITCH<br>DELTA ELECTRONICS IS ESTABLISHING A CAPABILITY FOR ASSEMBLING SEVERAL POWER TRANSISTOR CHIPS ON A COMMON HEAT SINK, AND FOR DRIVE AND CONTROL CIRCUITS IN A HERMETIC PACKAGE. THESE SWITCHES ARE FOR POWER CONDITIONERS AND INVERTERS FOR SILENT USE.             | 350.0              | 295.0                   | 32.0                                | JUN 80                           | JUN 80                          |
| E 78 3605 | TRANSCALANT-HIGH POWER-TRANSISTOR<br>A CONTRACT WILL BE AWARDED IN MARCH 1979 TO ALIGN SPOKE-LIKE EMITTER AND BALLAST WAFERS FOR HIGH POWER TRANSISTORS. WILL SOLVE MFG. PROBLEMS RELATED TO INTERDIGITATED WAFER STRUCTURES. THIS SHOULD HAVE BEEN FUNDED IN FY79, NOT FY78.                 | 50.0               | 30.0                    | 14.0                                | MAR 82                           | MAR 82                          |
| E 78 3606 | 250 AMP TRANSCALANT (HIGH POWER) RECTIFIER<br>RCA LANCASTER IS DEVELOPING A METHOD FOR PLATING VARIABLE THICKNESS METAL OVER A SEMICONDUCTOR WAFER SURFACE. THIS GIVES UNIFORM CURRENT DISTRIBUTION. EACH WAFER FORMS ONE RECTIFIER. ASSEMBLY PROCESSES AND TESTING ARE ALSO BEING ADDRESSED. | 360.0              | 305.0                   | 16.0                                | JUN 80                           | JUN 80                          |
| E 78 3613 | VEHICLE-MOUNTED ROAD MINE DETECTOR SYSTEM ANTENNAS<br>A CONTRACT HAS BEEN LET TO INVESTIGATE TECHNIQUES FOR MANUFACTURING ANTENNA MODULES. NEW TECHNIQUES ENHANCE MORE REPEATABLE ANTENNAS AT LOWER LABOR AND MATERIAL COSTS. THE INITIAL TECHNICAL MEETING HAS BEEN HELD.                    | 195.0              | 162.0                   | 10.0                                | JUN 80                           | JUN 80                          |
| E 78 3717 | HIGH TEMPERATURE TURBINE NOZZLE FOR 10 KW POWER UNIT<br>FUNDING JUST RECEIVED, NO WORK ACCOMPLISHMENT YET REPORTED.   | 343.0              | 0.0                     | 0.0                                 | SEP 81                           | SEP 81                          |
| E 77 3749 | HYDRAULIC ROTOR ACTUATORS<br>CONTRACTOR SUBMITTED TECHNICAL DRAWINGS FOR REVIEW. ALSO, ROTARY ACTUATORS ARE BEING FABRICATED FOR TESTING.   | 500.0              | 361.3                   | 0.0                                 | MAY 79                           | JUN 79                          |



MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
 SUMMARY PROJECT STATUS REPORT  
 1ST SEMI-ANNUAL SUBMISSION CY 76 HCS DRCMT-301

| PROJ NO.  | TITLE + STATUS   | AUTHORIZED | CONTRACT<br>VALUES | EXPENDED<br>LABOR AND<br>MATERIAL<br>(8000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|--|------------|--------------------|---|---|--|
|           |  |            |                    |   |   |  |
| 7 76 5504 | PRODUCTION OF PHOSPHAZENE ELASTOMERS<br>***** DELINQUENT STATUS REPORT ***** | 250.0      | 70.0               | 132.0                                       | SEP 77                                    | DEC 78                                   |



**COMMUNICATIONS R&D COMMAND  
(CORADCOM)**

# COMMUNICATIONS R & D COMMAND

| INHOUSE ALLOCATED | 22% |
|-------------------|-----|
|-------------------|-----|

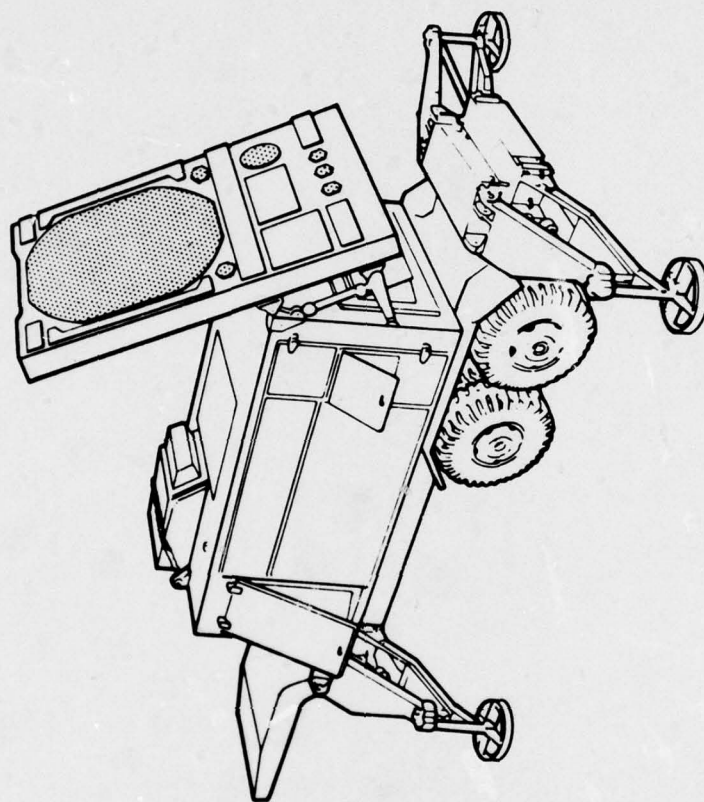
MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
SUMMARY PROJECT STATUS REPORT  
1ST SEMIANNUAL SUBMISSION CY 76 RCR DRCMT-301

| PROJ NO.   | TITLE + STATUS   | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESIDENT PROJECTED COMPLETE DATE |
|------------|--|--------------------|-------------------------|-------------------------------------|----------------------------------|-----------------------------------|
| 2 72 9025  | MM+T FOR TEMP COMPENSATED MICROCIRCUIT CRYSTAL OSCILLATORS<br>THE CONTRACT WITH CTS KNIGHT IS BEING TERMINATED IN JULY 1978<br>BECAUSE OF TECHNICAL AND ADMINISTRATIVE PROBLEMS. NEW<br>TECHNOLOGY--CERAMIC ENCLOSED CRYSTALS AND NEW HYBRID<br>TECHNIQUES--HAVE OBSOLETE THIS PROJECT WHICH IS 6 YEARS OLD. ALL<br>WORK HAS STOPPED | 130.0              | 114.4                   | 16.0                                | APR 74                           | NOV 79                            |
| 2 76 9758  | PROCESSES FOR METAL NITRIDE OXIDE SEMICONDUCTORS FOR BORMA<br>WESTINGHOUSE ADVANCED TECHNOLOGY LAB WROTE A PROGRAM TO PROBE<br>TEST THE CHIPS WHILE ON THE WAFER. WILL TEST 6000 CHIPS WITH A<br>MACRODOT 501 TESTER. ANOTHER PROGRAM CHECKS 16 CHIPS MOUNTED IN A<br>DUAL IN-LINE PACKAGE, METS, BUILT 3 DEDICATED TEST STATIONS    | 724.0              | 674.0                   | 50.0                                | AUG 78                           | NOV 78                            |
| 2 76 9773  | *COMPUTER AID F/PREP OF AUTO ANALOG CIRCUIT PROD TEST PROG<br>THIS PROJECT IS COMPLETE, THE VARIOUS COMPUTER PROGRAMS DEVELOPED<br>HAVE BEEN DEMONSTRATED, A FOLLOW ON CONTRACT HAS BEEN AWARDED TO<br>EXTEND THE TECHNIQUES TO ADDITIONAL AND MORE COMPLICATED<br>CIRCUITS. SEE PROJECT 2 78 9773.                                  | 193.0              | 175.3                   | 18.0                                | APR 78                           | JUL 78                            |
| 2 78 9773  | COMPUTER AID F/PREP OF AUTO ANALOG CIRCUIT PROD TEST PROG<br>A CONTRACT FOR THE ADDITIONAL EFFORT WAS AWARDED, SEE PROJECT 2<br>76 9773.   | 500.0              | 453.4                   | 0.0                                 | NOV 79                           | MAR 80                            |
| 2 76 9776  | FAB METHODS FOR LOW COST HYBRID SILICON PHOTODETECTOR MODULE<br>RCA CANADA COMBINED AN AVALANCHE PHOTO DIODE WITH MODULAR<br>CIRCUITRY TO PRODUCE A DETECTOR-PREAMPLIFIER, THE PHOTO DETECTOR<br>IS APPLIED TO THE FIBER OPTIC CABLE WITH EPOXY.   | 446.5              | 411.4                   | 35.0                                | AUG 78                           | JUN 79                            |
| 2 76 9778  | PM FOR LONG LIFE LIGHT EMITTERS FOR FIBER OPTICS<br>LONG LIFE LIGHT EMITTERS FOR FIBRE OPTIC COMMUNICATIONS, SEE<br>INDIVIDUAL TASKS FOR STATUS.   | 437.8              | 392.8                   | 45.0                                | AUG 78                           | NOV 80                            |
| 2 76 9778A | LONG LIFE LIGHT EMITTER FOR FIBER OPTICS<br>LASER DIODE LABS DESIGNED, CONSTRUCTED AND TESTED BURN-IN RACKS<br>AND OTHER TEST EQUIPMENT FOR INJECTION LASER DIODE DESIGN OF<br>TRIPLE STRIPE, INJECTION LASERS ARE FOR USE IN FIBER OPTIC CABLES<br>TO REPLACE 26 PAIR TELEPHONE CABLE.  | 437.8              | 193.9                   | 25.0                                |                                  | JUL 80                            |
| 2 76 9778B | LONG LIFE LIGHT EMITTER FOR FIBER OPTICS<br>LASER DIODE LABS STARTED PRODUCTION OF BURRIS TYPE LIGHT EMITTING<br>DIODES WITH A SMALLER, STRONGER PICTURE. THE SPECIFICATION ON THE<br>CONTRACT WAS EXTENDED 6 MONTHS WITHOUT ADDED COST.   | 437.8              | 198.9                   | 20.0                                |                                  | NOV 80                            |
| 2 76 9781  | THIN FILM TRANSISTOR ADDRESSED DISPLAY<br>SEE SUBTASKS BELOW.  | 590.0              | 549.0                   | 39.9                                | AUG 78                           | JUL 79                            |



MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
SUMMARY PROJECT STATUS REPORT  
1ST SEMIANNUAL SUBMISSION CY 78 ACS DRCHT-301

| PROJ NO.   | TITLE + STATUS   | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|------------|--|--------------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| 2 76 9781A | THIN FILM TRANSISTOR-ADDRESS DISPLAY<br>WESTINGHOUSE RAN ITS VACUUM DEPOSITION SYSTEM AND PRODUCED 4 THIN FILM TRANSISTOR ADDRESSED DISPLAYS PER PUMPOUN, AN ENGINEERING CHANGE TO USE THIN FILM PHOSPHORS + INTEGRATED SCANNING CIRCUITRY WAS AWARDED. MASK AND FUZZINESS PROBLEMS WERE SOLVED.             | 590.0              | 310.0                   | 35.0                                |                                  | JUL 79                          |
| 2 76 9781B | THIN FILM TRANSISTOR-ADDRESS DISPLAY<br>WESTINGHOUSE RECEIVED ADDITIONAL FUNDING TO INCORPORATE HIGH CONTRAST THIN FILM PHOSPHORS AND INTEGRATED SCANNING CIRCUITRY ON THIS DISPLAY PANEL.   | 590.0              | 230.0                   | 4.9                                 |                                  | JUL 79                          |
| 2 77 9835  | INT CONTRL CRCT FOR THIN FILM TRANSISTR DISPLAY<br>AERJECT ELECTRO SYSTEMS COMPLETED 40 PHOTO MASKS FOR THE ACTIVE MATRIX DISPLAY. A TESTER IS ALSO BEING BUILT. A SEALING METHOD FOR THE THIN FILM DISPLAY IS NEEDED FOR LONGER LIFE. DRIVE CIRCUITRY AND ELECTROLUMINESCENT ELEMENTS WILL BE MADE ON 1 MAF | 448.8              | 398.8                   | 27.5                                | MAR 79                           | DEC 79                          |
| 2 78 9898  | RUGGEDIZED TACTICAL FIBER OPTIC CABLES<br>FIBRE OPTIC CABLES OFFER ADVANTAGES OVER CONVENTIONAL METALLIC CABLES IN WEIGHT, SPACE NEEDS, REPEATER NUMBER, IMMUNITY TO EMI AND CROSSTALK. CONTRACT SOLICITATION IS IN PROGRESS.  | 600.0              | 0.0                     | 24.0                                | NOV 79                           | AUG 80                          |



**ELECTRONICS R&D COMMAND  
(ERADCOM)**

CURRENT FUNDING STATUS, 197 FY78

| FISCAL<br>YEAR     | NO. OF<br>PROJECTS | AUTHORIZED<br>FUNDS<br>(\$) | CONTRACT FUNDING       |                       | INHOUSE FUNDING        |                       |
|--------------------|--------------------|-----------------------------|------------------------|-----------------------|------------------------|-----------------------|
|                    |                    |                             | *<br>ALLOCATED<br>(\$) | *<br>EXPENDED<br>(\$) | *<br>ALLOCATED<br>(\$) | *<br>EXPENDED<br>(\$) |
| 70                 | 1                  | 99,000                      | 96,800                 | (100%)                | 2,200                  | (100%)                |
| 71                 | 0                  | 0                           | 0                      | (0%)                  | 0                      | (0%)                  |
| 72                 | 0                  | 0                           | 0                      | (0%)                  | 0                      | (0%)                  |
| 73                 | 0                  | 0                           | 0                      | (0%)                  | 0                      | (0%)                  |
| 74                 | 1                  | 771,500                     | 605,000                | (82%)                 | 126,500                | (100%)                |
| 75                 | 6                  | 2,124,900                   | 1,906,600              | (90%)                 | 218,300                | (88%)                 |
| 76                 | 14                 | 5,514,100                   | 4,421,200              | (53%)                 | 1,092,900              | (39%)                 |
| 77                 | 0                  | 0                           | 0                      | (0%)                  | 0                      | (0%)                  |
| 77                 | 17                 | 9,954,800                   | 8,051,000              | (36%)                 | 1,903,800              | (33%)                 |
| 78                 | 6                  | 2,706,400                   | 317,500                | (1%)                  | 2,388,900              | (0%)                  |
| TOTAL              | 35                 | 21,170,700                  | 15,438,100             | (49%)                 | 5,732,600              | (24%)                 |
| AUTHORIZED FUNDING |                    |                             | CONTRACT ALLOCATED 73% |                       | INHOUSE ALLOCATED 27%  |                       |

8 U M M A R Y P R O J E C T S T A T U S R E P O R T  
MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
1ST SEMI-ANNUAL SUBMISSION CY 78 RCS DRMT-301

| PROJ NO.  | TITLE + STATUS  | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|-----------|---|--------------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| H 76 3126 | WHITE STARTER FOR THERMAL BATTERIES<br>ALL STATIONS EXCEPT THE FINAL STATION ARE ASSEMBLED AND WORKING AND NOW REQUIRE ONLY MINOR MECHANICAL MODIFICATIONS PLUS INSTALLATION OF CONTROL SYSTEMS FOR COMPLETION. LATE DELIVERY OF A GPE CENTRIFUGE HAS CAUSED A 120 DAY DELAY IN THE CONTRACT.           | 150.0              | 90.0                    | 46.0                                | OCT 77                           | NOV 78                          |
| 2 70 9217 | *MHT-FERRITE SOLID STATE RECEIVER PROTECTOR<br>VARIAN AT BEVERLY MASS HAS PRODUCED A LONG LIFE SOLID STATE FERRITE DIODE RECEIVER PROTECTOR. TEN VFA-9500 LIMITERS WERE PRODUCED AND HALF OF THEM WERE SENT TO HUGHES FOR USE IN THE TPO-36 MORTAR LOCATING RADAR. CONTRACT WAS EXTENDED FOR TESTING.   | 99.0               | 96.0                    | 2.2                                 | JUL 74                           | SEP 78                          |
| 2 75 9371 | *AUTOMATING ELECTROD PRODUCTION OF LITHIUM CELLS<br>THIS EFFORT COULD NOT BE COMPLETED WITH THE REMAINING FUNDS. SINCE OTHER COMPANIES ARE CAPABLE OF PRODUCING THE CELLS AT THE DESIRED RATE OF 5000 CELLS PER MONTH IT WAS DECIDED TO CANCEL THIS PROJ.   | 379.4              | 331.4                   | 45.7                                | JUL 77                           | SEP 78                          |
| 2 75 9441 | *ARC PLASMA SPRAYED PHASE SHIFT ELEMENTS<br>PROJECT COMPLETED. THE ARC PLASMA SPRAY PROCESS WAS SHOWN TO BE AN EFFECTIVE TECHNIQUE FOR FABRICATING DIELECTRIC-LOADED FERRITE PHASE SHIFTERS. HOWEVER, IMPROVED MATERIALS AND PROCESS TO ASSURE REPRODUCIBILITY ARE NEEDED BEFORE IT CAN BE COMPETITIVE  | 280.0              | 253.0                   | 27.0                                | AUG 77                           | MAR 78                          |
| 2 75 9525 | HOT PRESSING OF PIZZO CERAMIC ELEMENTS FOR HV TRANSFORMERS.<br>TESTING WAS COMPLETED ON THE CONFIRMATORY SAMPLES AND ALL MET SPECIFICATION. ALL PARTS HAVE BEEN ORDERED FOR THE PILOT PHASE WITH ASSEMBLY TESTING AND DELIVERY TO BE COMPLETED BY JULY.   | 229.4              | 192.9                   | 36.5                                | OCT 77                           | SEP 78                          |
| 2 76 9631 | IC FABRICATION USING ELECTRON BEAM TECHNOLOGY<br>TEXAS INSTRUMENTS USED ITS PROPRIETARY RESIST TO OVERCOME PINHOLE PROBLEMS. 117 RANDOM ACCESS MEMORIES WERE MADE ON 6 WAFERS WITHOUT MASKS. TYPE OF MEMORY WAS CHANGED TO ONE HAVING A TRI-STATE OUTPUT INSTEAD OF BI-STATE. UNITS PASSED MIL STD 883. | 782.9              | 674.0                   | 25.0                                | AUG 77                           | DEC 78                          |
| 2 75 9665 | MEASUREMENT OF ELECTROCOMPONENTS UNDER DYNAMIC STRESS<br>LOCKHEED FABRICATED APPROXIMATELY 2900 AMPLIFIER PRINTED CIRCUIT BOARDS FOR TEST AND LASER TRIMMING OF RESISTORS. A STUDY OF THE EFFECT LASER TRIMMING HAS ON THE RESISTOR AND A STATISTICAL EVALUATION OF THE AMPLIFIER ARE IN PROCESS.       | 735.1              | 697.6                   | 33.0                                | SEP 77                           | OCT 78                          |
| 2 76 9679 | NUMERICAL CONTROL LATHE LANGUAGE EVALUATION<br>***** DELINQUENT STATUS REPORT ***** THIS IS AN ERADCOM PROJECT HOWEVER THE WORK IS BEING DONE BY CORADCOM.  | 305.0              | 175.1                   | 0.0                                 | OCT 79                           | JUN 80                          |



S U M M A R Y P R O J E C T S T A T U S R E P O R T  
1ST SEMIANNUAL SUBMISSION CY 78 RCS DRCHT-301

| PROJ NO.  | TITLE + STATUS  | AUTHOR-<br>RIZED<br>(\$000) | CONTRACT<br>VALUES<br>(\$000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(\$000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|---|-----------------------------|-------------------------------|---|---|--|
| 2 76 9732 | FABRICATION + ATTACHMENT OF HEAT PIPES TO THYRISTER WAFERS,<br>***** DELTNOUQU STATUS REPORT *****  | 365.0                       | 340.0                         | 21.0  | AUG 78                                    | JAN 79                                   |
| 2 76 9736 | EPITAXIAL + METALLIZATION PROCESSES F/GAAS IMPATT DIODES<br>MICROWAVE ASSOCIATES IS OBTAINING REPRODUCIBLE RESULTS WITHIN 8X<br>OF DOPING DENSITY USING AUTOMATIC CONTROL OF DOPANT GAS. THEY<br>ALSO AUTOMATED THE GROWTH OF EPITAXIAL LAYERS. FEEDBACK CONTROL<br>REGULATES GAS QUANTITIES IN ACCORDANCE WITH CONDITIONS.         | 248.8                       | 248.8                         | 0.0   | JUN 77                                    | JAN 79                                   |
| 2 75 9739 | PHOTOLITHOGRAPHIC TECHNIQUES FOR SURFACE WAVE ACOUSTICS<br>HUGHES USED GLASS MASKS AND FINE LINE PHOTOLITHOGRAPHY TO PROCESS<br>SURFACE ACOUSTIC WAVE FILTERS. WELDED GOLD PLATED KOVAR AND NICKEL<br>PLATED STEEL PACKAGES CHEAPER AND BETTER THAN SOLDERED TIN PLATED<br>PACKAGES. FLUXLESS SOLDERING BETTER THAN STANDARD        | 225.0                       | 185.7                         | 20.0  | AUG 77                                    | SEP 78                                   |
| 2 76 9746 | THIN FILM AL OXIDE ION BARRIER FOR 16MM MICROCHANNEL PLATES.<br>ITT ELECTRO OPTICAL DIVISION DEPOSITED A THIN FILM OF ALUMINUM<br>OXIDE OVER A LAQUER LAID ON THE MICROCHANNEL PLATE. THE LAQUER IS<br>THEN BURNED OFF. THE RESULTING FILM BARS POSITIVE IONS FROM THE<br>MCP FROM DAMAGING THE PHOTOCATHODE. TESTING IS A PROBLEM. | 480.0                       | 432.0                         | 30.0  | JUL 79                                    | JUL 79                                   |
| 2 76 9749 | THICK FILM PROCESSING OF MICROWAVE INTEGRATED CIRCUITS.<br>COLLINS RADIO IS ATTEMPTING TO CONVERT A THIN FILM<br>MODULATOR/TRANSMITTER TO THICK FILM. THICK FILM WAS SHOWN TO BE<br>SATISFACTORY FOR HIGH FREQUENCY -2 GHz- BUT COLLINS HAD PROBLEMS<br>WITH HIGHER INSERTION LOSS AND THUS LINEARITY. WORK SHOULD BE<br>TERMINATE  | 360.0                       | 300.0                         | 50.0  | JUN 78                                    | JUL 79                                   |
| 2 74 9750 | FAB OF 16MM IMAGE INTENSIFIER TUBES BY BATCH PROCESSING<br>LITTON HAS APPLIED BATCH PROCESSING TO TUBE MANUFACTURE. THEY DO<br>TUBE EVACUATION, PHOTOCATHODE FORMATION, MCP OUTGASSING, PHOSPHOR<br>SCREEN OUTGASSING, AND SEALING OF THE TUBE ALL IN ONE VACUUM<br>CHAMBER. THE CONTRACT SHOULD BE TERMINATED NOW.                 | 771.5                       | 645.0                         | 126.5   | FEB 76                                    | DEC 78                                   |
| 2 77 9751 | MFR METHODS FOR FABRICATION OF YAG LASER ROOS<br>LITTON BUILT A SECOND POLISHING FIXTURE AND AN INEXPERIENCED<br>OPERATOR OBTAINED 100% YIELD WHEN POLISHING 26 YAG ROOS. BUT RCA<br>CAN USE ONLY BETTER-THAN-SPEC ROOS IN THE GVS-9 LASER RANGE<br>FINDER. THE SPEC SHOULD BE UPGRADED AND THE CONTRACT REVISED.                   | 142.0                       | 66.5                          | 24.0  | JAN 79                                    | JUN 79                                   |
| 2 76 9754 | CONTIN CYCLE PROC OF SHOCK RESISTANT QUARTZ CRYSTAL UNITS<br>THE IN-LINE ULTRAHIGH VACUUM FABRICATION FACILITY HAS BEEN<br>DESIGNED AND CONSTRUCTED. AND ASSEMBLY IS PARTIALLY COMPLETE.<br>ELECTRONIC CONTROL CIRCUITRY HAS BEEN DESIGNED AND CONSTRUCTED.   | 826.7                       | 766.7                         | 35.0  | AUG 78                                    | DEC 79                                   |

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
SUMMARY PROJECT STATUS REPORT  
1ST SEMIANNUAL SUBMISSION CY 76 RCS DRCHT-301

| PROJ NO.   | TITLE + STATUS  | AUTHORIZED<br>(\$000) | CONTRACT<br>VALUES<br>(\$000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(\$000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|------------|---|-----------------------|-------------------------------|---|---|--|
| 2 77 9750  | CONTIN CYCLE PROC OF SHOCK RESISTANT QUARTZ CRYSTAL UNITS<br>FUNDS WERE TRANSFERRED TO THE DEPT. OF ENERGY IN MAY 1976, WORK AT<br>THE GENERAL ELECTRIC NEUTRON DEVICES DEPT. WILL COMMENCE 1 JUL 76.   | 1,426.4               | 1,363.4                       | 34.0  | DEC 79                                    | JUN 80                                   |
| 2 76 9766  | DEPOSITION OF A HIGH VOLTAGE INSULATING LAYER FOR THICK FILM<br>SERIE TECH IS AUTOMATING THE ASSEMBLY AND POTTING OF SERIES<br>RECTIFIERS AND CAPACITORS TO FORM DISC-SHAPED VOLTAGE MULTIPLIERS<br>FOR IMAGE INTENSIFIERS. THIS IS PRODUCTION ENGINEERING OF A<br>FAMILY OF VOLTAGE MULTIPLIERS.                                     | 182.9                 | 128.5                         | 27.0  | AUG 78                                    | MAY 79                                   |
| 2 76 9767  | MMAT MEAS FOR DEPOSITION OF THICK FILM CIRCUITS P/CRYST OSC<br>RAYTHEON RECONFIGURED THE COMPLEX OSCILLATOR CIRCUIT TO PERMIT<br>ITS MANUFACTURE BY THICK FILM TECHNIQUES. THERE WERE 897K AND<br>392K OVERRUNS AND \$250K IS NEEDED TO FINISH THE WORK. THE<br>CONTRACT SHOULD BE TERMINATED, PROPOSAL 2769767 IS FOR A<br>FOLLOWON. | 392.8                 | 269.1                         | 30.2  | AUG 78                                    | JUN 79                                   |
| 2 76 9771  | LOW TEMP PROCESS OF BULK SEMICONDUCTOR SWITCHES + LIMITERS<br>MICROWAVE ASSOCIATES IS PROCESSING HIGH PURITY 1600 OHM-CM<br>SILICON INTO LIMITERS. SAMPLE PRODUCTION WAS DELAYED TWO MONTHS<br>TO ALLOW MA TO BUILD ADDITIONAL HARDWARE. WORK IS HIGHLY END ITEM<br>ORIENTED. FOR TPO-36 AND 37 RADARS.                               | 380.0                 | 347.5                         | 30.0  | AUG 78                                    | DEC 78                                   |
| 2 76 9774  | IMP PLATED-THRU HLS BY ALTERING DRILL GEOMETRY + FINISH<br>***** DELINQUENT STATUS REPORT ***** THIS IS AN ERADCOM PROJECT<br>HOWEVER THE WORK IS BEING DONE BY CORADCOM.   | 125.0                 | 65.8                          | 60.0  | JUN 77                                    | JAN 78                                   |
| 2 76 9783  | PRODUCTION OF HIGH RESISTIVITY SILICON MATERIAL<br>SEE SUBTASKS BELOW. WORK IS JOINT WITH AFML.   | 501.0                 | 275.0                         | 40.0  | AUG 78                                    | JUL 78                                   |
| 2 76 9783A | PRODUCTION OF HIGH RESISTIVITY SILICON MATERIAL<br>HUGHES AIRCRAFT CO BUILT A DIFFUSION CAPABILITY TO PURIFY SILANE<br>AND A BOULE-GROWING CAPABILITY TO GROW HIGH PURITY SILICON. A<br>DEMONSTRATION WAS RUN FOR INDUSTRY. WAFERS WERE SUPPLIED TO RCA<br>CANADA FOR USE IN DETECTORS. RESISTIVITY IS A HIGH 20K OHM.                | 501.0                 | 275.0                         | 40.0  |   | JUL 78                                   |
| 2 76 9783B | PRODUCTION OF HIGH RESISTIVITY SILICON MATERIAL<br>UNIV. OF DAYTON RESEARCH INST. IMPROVED MEASURING TECHNIQUES FOR<br>CHARACTERIZING HIGH RESISTIVITY SILICON. WAFERS WERE SUPPLIED TO<br>ARMY AND RCA CANADA. FOR COPPERHEAD AND HELLFIRE MISSILES. HUGHES<br>PROPOSED MULTIPLE DRAWS TO REDUCE BOULE COST.                         | 0.0                   | 0.0                           | 0.0   |   | JUL 78                                   |
| 2 76 9788  | FAB OF LOW VOLTAGE START SEALED BEAM ARC LAMPS.<br>THE CONTRACTOR HAD TECHNICAL DIFFICULTIES PRODUCING THE THIRD<br>ENGINEERING SAMPLES TO MEET SPECIFICATIONS. THE CONTRACT IS<br>BEHIND SCHEDULE AND WILL BE TERMINATED.  | 324.0                 | 290.7                         | 33.3  | AUG 78                                    | JUL 79                                   |

SUMMARY PROJECT STATUS REPORT  
1ST SEMIANNUAL SUBMISSION CY 78 RCS DRCHT-301

| PROJ NO.  | TITLE + STATUS  | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|-----------|---|--------------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| 2 77 9792 | PON OF FUNNELLED MCPs WITH HIGH SECONDARY EMITTING COATING<br>GALILEO CORP DREN FINER FIBERS TO ACHIEVE 10 MICRON SPACING OF CHANNELS. ALSO WORKED ON ETCHING TO OBTAIN A FUNNEL EFFECT. IMPROVED ALUMINUM OXIDE FILM INTEGRITY OVER LARGER FUNNELED AREA. SAMPLE MCPs WERE MADE WITH THE NEW FIXTURES.                 | 600.0              | 471.7                   | 13.0                                | MAR 80                           | DEC 79                          |
| 4 76 9793 | PON OF INTAGLIATED FIBER OPTIC PHOSPHOR SCREEN<br>A CONTRACT WAS LET TO ITT ELECTRO OPTICS PRODUCTS DIVISION TO ESTABLISH METHODS FOR ETCHING OUT FIBER OPTIC CORE GLASS, METALLIZING THE HOLE WALLS, AND DEPOSITING PHOSPHOR AND ALUMINUM COATINGS. THIS PREVENTS LIGHT FEEDBACK AND LENGTHENS SCREEN LIFE.            | 200.0              | 177.1                   | 0.9                                 | DEC 79                           | APR 80                          |
| 2 77 9805 | AUTO MICROCIRCUIT BRIDGE PON MEASURE OF QUARTZ CRYSTALS<br>A TECHNICALLY ACCEPTABLE BIDDER WAS IDENTIFIED BUT THE BID WAS HIGHER THAN EXPECTED. INCREASED FUNDING WAS REQUESTED. THE OBJECTIVE IS A FASTER, MORE ACCURATE METHOD FOR TESTING CRYSTALS THAN USING THE CRYSTAL IMPEDANCE CI METER. WILL TEST 200 PER DAY. | 400.0              | 0.0                     | 75.0                                | JAN 79                           | AUG 80                          |
| 2 77 9808 | AUTO INPROCESS EVAL OF THICK FILM PRINT + HYBRID CKT ASSY<br>RCA WORKED ON THE CONTROL/DISPLAY STATION AND THE INSPECTION STATION. THE FIRST INCLUDES A VIDEO AND A CONTROL SUBSYSTEM. THE SECOND INCLUDES THE RETURN BEAM VIDEO CAMERA AND LIGHTS. SOFTWARE WAS WRITTEN TO CHECK INKED SUBSTRATES AND FULL HYBRIDS.    | 515.0              | 470.0                   | 32.0                                | AUG 78                           | OCT 78                          |
| 2 77 9809 | MEAS TECHNIQ FOR CHEMICALS IN WPG PROC FOR SOLID ST MICROCOPY<br>SPECTROGRAPHIC ANALYSIS SYSTEMS COMPUTER INTERFACE, DATA COLLECTION AND TRANSMISSION EQUIPMENT HAVE BEEN INSTALLED AND OPERATED. TRIAL PIN DIODE RUNS HAVE BEEN INITIATED WITH VARIATIONS IN CONTAMINANT LEVELS DETERMINED.                            | 553.8              | 553.8                   | 0.0                                 | NOV 78                           | NOV 78                          |
| 2 77 9811 | REDUC WPG COSTS FOR MICROWAVE POWER TRANSISTORS-IN PROC TUNER<br>TRN IS BUILDING INDUCTORS AND CAPACITORS ON THE WAFER TO PERMIT EASIER MATCHING OF HIGH-POWER, HIGH-FREQUENCY TRANSISTORS. OPERATOR ERROR CAUSED PROBLEMS WITH THE FIRST RUN. USE HIGH RESISTIVITY SILICON WAFERS! COULD BE ANOTHER USER OF HUGHES 81. | 597.0              | 529.4                   | 25.6                                | JUL 79                           | JUL 79                          |
| 2 77 9812 | HW+T FOR SPLIT CYCL STIRLING COOLER.<br>AN ENGINEERING COOLER WAS TESTED SUCCESSFULLY. A HYBRID MOTOR CIRCUIT REQD FOR THIS PROJECT WILL BE OBTAINED AT A LATER DATE.   | 795.0              | 439.9                   | 65.0                                | JAN 80                           | JAN 80                          |
| 2 77 9813 | SUGGESTED LOW COST QUADRANT DETECTOR FOR CLGP.<br>TEXAS INSTRUMENTS IS IN PROCESS OF ESTABLISHING AUTOMATED PRODUCTION PROCESSES FOR RUGGEDIZED, LOW COST SILICON QUADRANT PHOTODETECTORS FOR THE CANNON LAUNCHED GUIDED PROJECTILE. THE CONTRACTOR IS BEHIND SCHEDULE WITH SECOND ENGINEERING SAMPLES.                 | 375.0              | 150.0                   | 40.0                                | JAN 80                           | JAN 80                          |

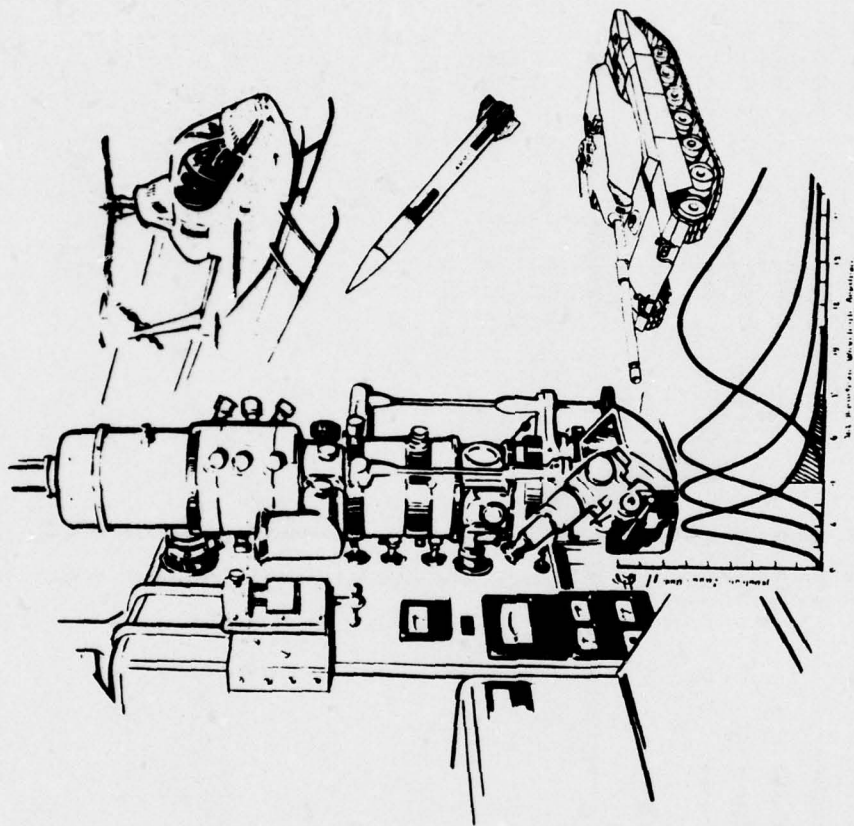
MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
S U M M A R Y P R O J E C T S T A T U S R E P O R T  
187 SEMI-ANNUAL SUBMISSION CY 78 RGS DRGNT-301

| PROJ NO.   | TITLE + STATUS   | AUTHOR-<br>RIZED<br>(9000) | CONTRACT<br>VALUES<br>(9000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(9000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|------------|--|----------------------------|------------------------------|--|---|--|
| 2 77 9827  | PROCESSING XP ARMOR FOR RADAR HARDENING APPLICATIONS<br>WORK CONSISTED OF PROVIDING FILM FOR THE CONTRACT EFFORT,<br>ACQUIRING FILM STRETCHING EQUIPMENT FOR THE PURPOSES OF ASSURING<br>ADDITIONAL FILM FOR THE PROJECT AND A POST-PROJECT PRODUCTION<br>CAPABILITY, MODIFYING TOOLING, AND ARRANGING FOR PANEL TESTING.        | 500.0                      | 233.1                        | 127.7  | JUL 79                                    | JAN 80                                   |
| H 78 9829  | *PROCESS F/BURIED CHANNEL CCO F/INFRARED IMAGES<br>THIS PROJECT HAS BEEN CANCELLED.  | 0.0                        | 0.0                          | 0.0  | JUL 78                                    | JUL 78                                   |
| 2 77 9831  | PILOT MFG RUGGED L-BAND CRYSTAL CONT'D TELEMETRY TRANSMITTER<br>JOHN HOPKINS APPLIED PHYSICS LABS HAD TO RECONFIGURE THE<br>TRANSMITTER CIRCUIT TO PREVENT CROSSTALK, APL DELAYED THE WORK<br>BECAUSE OF HIGHER PRIORITY JOBS. READBOARD DESIGN MUST BE<br>CONVERTED TO STRIPLINE, EXTENDED SUPPORT USED UP PILOT RUN FUNDS.     | 79.0                       | 182.0                        | 15.0   | OCT 78                                    | OCT 78                                   |
| 2 77 9832  | *AUTO WIREWRAP VERIFIER/CAM RELATED<br>PROJECT COMPLETED. THE HDL ALGORITHM HAS BEEN SUCCESSFULLY<br>INTEGRATED WITH AUTOMATIC WIREWRAP MACHINE SOFTWARE. THE CLASS I<br>TECHNICAL REPORT IS BEING PREPARED.   | 30.0                       | 0.0                          | 30.0   | SEP 77                                    | SEP 78                                   |
| 2 77 9834  | FABRICATION- SERIES TRANSDUCER ACOUSTIC DELAY LINES<br>WESTINGHOUSE PRODUCED TWO TRANSDUCER DESIGNS USING A COMPUTER AND<br>PHOTOLITHOGRAPHIC TECHNIQUES. TEST RESULTS WERE FAVORABLE. TEST<br>PROCEDURES WERE DESIGNED AND IMPLEMENTED. THIN FILM DEPOSITED<br>INDUCTOR TUNING ELEMENTS WERE MADE USING METAL MASKS.            | 270.6                      | 222.6                        | 11.6   | MAR 79                                    | SEP 79                                   |
| 2 75 9836  | *QC TECH FOR FABR OF 18MM + 25MM ETCHED CORE MICROCHAN PLATS<br>VARIAN ASSOCIATES CONCENTRATED ON FORMALIZING ITS QUALITY CONTROL<br>PROCEDURES FOR MICROCHANNEL PLATES. MCPs ARE NOW BETTER, CHEAPER,<br>AND MORE AVAILABLE. YIELD WAS IMPROVED FROM 16% TO 30%. NITECH<br>ALSO USES THESE PROCEDURES TO REDUCE REJECTION RATE. | 276.0                      | 246.0                        | 30.0   | MAR 77                                    | MAY 78                                   |
| H 78 9841  | ZINC SELENIDE WINDOWS AND OPTICAL ELEMENTS<br>A CONTRACT HAS BEEN NEGOTIATED WITH RATHEON FOR THIS EFFORT. THE<br>CONTRACT WAS ABOVE AVAILABLE FUNDS AND DELAY OF AWARD HAS<br>DELAYED.  | 156.0                      | 140.4                        | 2.0  | DEC 79                                    | JUN 80                                   |
| 2 77 9842  | THIRD GENERATION .9 MICRON PHOTOCATHODE<br>SEE SUBTASKS A AND B.   | 1,893.0                    | 1,771.1                      | 19.4   | DEC 79                                    | SEP 79                                   |
| 2 77 9842A | VARIAN WORK<br>VARIAN LSE DEVELOPED A PUSH-PULL EPITAXIAL GROWTH SYSTEM FOR<br>GROWING GALLIUM ARSENIDE ON GALLIUM ARSENIDE WAFERS. ALSO WORKED<br>ON GLASS SEALING AND ANTI-REFLECTIVE COATING. WILL RESULT IN HIGH<br>PERFORMANCE PHOTO CATHODES.  | 0.0                        | 963.0                        | 0.0  | DEC 79                                    | SEP 79                                   |



MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
S U M M A R Y P R O J E C T S T A T U S R E P O R T  
1ST SEMIANNUAL SUBMISSION CY 78 RCB DRCMT-301

| PROJ NO.   | TITLE + STATUS   | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|------------|--|--------------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| 2 77 98428 | ITT WORK<br>ITT CORP HAD PROBLEMS WITH THE ANTI-REFLECTIVE COATING PROCESS AND IS LATE ON DELIVERY OF SAMPLES. SPUTTER DEPOSITION IS BEING USED TO APPLY THE ANTI-REFLECTIVE COATING. WORK IS AT TWO FIRMS TO PROVIDE A SECOND SOURCE.   | 0.0                | 808.1                   | 0.0                                 | DEC 79                           | SEP 79                          |
| 2 77 9845  | NUMERICALLY CONTROLLED OPTICAL FABRICATION<br>HONEYWELL MADE SEVERAL FLAT GERMANIUM BLANKS BY COMPACTION, CASTING AND DIAMOND TURNING. THEY DID NOT KEEP DATA ON OPTICAL PROPERTIES BEFORE PROCESSING + PART OF THE WORK WILL HAVE TO BE REPEATED. HONEYWELL IS DIAMOND TURNING GERMANIUM ASPHERICS.                       | 333.3              | 304.3                   | 1.0                                 | OCT 77                           | DEC 79                          |
| 2 77 9857  | AUTO SEPARATION, CARRIER MOUNTING + TESTING OF SEMI-CDT DICE<br>HONEYWELL WILL SUBCONTRACT OUT FOR A LEAD FRAME PLATER, WIRE BONDER, EPOXY DISPENSER AND DIE PLACER, AND WAFER INSPECTION EQUIPMENT. MACRODOT 150 AND FIARCHILD 5000 TESTERS WERE BOUGHT. MECHANICAL + AIR SUBSTRATE HANDLERS ARE BEING BUILT FOR A DEVICE | 901.9              | 770.8                   | 100.4                               | OCT 79                           | OCT 79                          |
| M 78 9860  | PDN TECHOE=GALLIUM ARSENIDE MIMAY FIED EFFECT TRANSISTORS<br>A CONTRACTOR WILL IDENTIFY YIELD-LIMITING STEPS AND THEN DEVELOP A PROCESS AND CONTROLS FOR MAKING GALLIUM ARSENIDE MICROWAVE FIELD EFFECT TRANSISTORS. (GASSETS) WILL WORK ON EPITAXIAL LAYER GROWTH, ION IMPLANTATION, CONTACTS, TESTING PACKAGING.         | 600.0              | 0.0                     | 0.0                                 | NOV 80                           | OCT 80                          |
| M 78 9871  | *AUTO PRODUCTION OF MILITARY INTEGRATED CIRCUITS<br>PROJECT WAS CANCELLED BECAUSE THE OBJECTIVE DISAPPEARED. 8500K WENT TO 9738 PULSED GAAS IMPATT DIODES AND 3250K WENT TO 9767 AUTO ASSY OF TEMPERATURE COMPENSATED VOLTAGE CONTROLLED CRYSTAL OSCILLATORS (TCVCOX).   | 750.0              | 0.0                     | 0.0                                 | NOV 79                           | NOV 79                          |
| 2 77 9873  | ANTENNA PATTERN MEASUREMENTS USING NEARFIELD TECHNIQUES<br>COMPUTER EQUIP HAS BEEN PURCHASED AND SOFTWARE IS BEING WRITTEN. THE TESTING EQUIPMENT HAS ALSO BEEN PURCHASED AND INSTALLED. DELAYS IN OBTAINING ANTENNAS FOR TESTING WILL REQUIRE AN EXTENSION OF TIME AND MONEY FOR THIS PROJECT.                            | 542.4              | 515.4                   | 17.0                                | OCT 79                           | NOV 78                          |
| M 78 9889  | THIRD GENERATION 0.9 MICRON WAFER INTENSIFIER TUBE<br>A CONTRACTOR WILL ESTABLISH CAPABILITY FOR MANUFACTURING THIRD GENERATION IMAGE TUBES. PROCESS AND TEST EQUIPMENT WILL BE DESIGNED FOR AUTOMATED OPERATION BY LOW SKILLED PERSONNEL. TUBES ARE NEEDED FOR NIGHT AIRBORNE OPERATIONS.                                 | 1,000.0            | 0.0                     | 5.0                                 | DEC 79                           | DEC 79                          |



**MATERIALS AND MECHANICS RESEARCH CENTER  
(AMMRC)**

**US ARMY MATERIEL DEVELOPMENT AND READINESS COMMAND  
(DARCOM)**

HEADQUARTERS-DARCOM + ARMY MATERIALS AND MECHANICS RESEARCH CENTER  
CURRENT FUNDING STATUS, 1ST FY78

| FISCAL<br>YEAR     | NO. OF<br>PROJECTS | AUTHORIZED<br>FUNDS<br>( \$ ) | %<br>ALLOCATED<br>( % ) | C O N T R A C T F U N D I N G<br>EXPENDED<br>( \$ ) | %<br>ALLOCATED<br>( % ) | I N H O U S E F U N D I N G<br>EXPENDED<br>( \$ ) |
|--------------------|--------------------|-------------------------------|-------------------------|---|-------------------------|---|
| 74                 | 2                  | 431,000                       |                         | 68,500  |                         | 362,500 ( 99% )                                   |
| 75                 | 2                  | 3,840,000                     |                         | 695,200   |                         | 3,144,800 ( 97% )                                 |
| 76                 | 3                  | 4,597,000                     |                         | 599,500   |                         | 3,997,500 ( 87% )                                 |
| 77                 | 2                  | 883,000                       |                         | 113,400   |                         | 769,600 ( 86% )                                   |
| 77                 | 3                  | 4,321,000                     |                         | 916,600   |                         | 3,404,400 ( 79% )                                 |
| 78                 | 2                  | 5,050,000                     |                         | 163,000   |                         | 4,887,000 ( 97% )                                 |
| TOTAL              | 14                 | 19,122,000                    |                         | 2,556,200   |                         | 16,565,800 ( 87% )                                |
| AUTHORIZED FUNDING |                    |                               | CONTRACT ALLOCATED 13%  |   |                         | INHOUSE ALLOCATED 86%                             |

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
S U M M A R Y P R O J E C T S T A T U S R E P O R T  
1ST SEMIANNUAL SUBMISSION CY 78 RCB DRCHT-301

| PROJ NO.   | TITLE + STATUS   | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|------------|--|--------------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| M 77 6350  | MATERIALS TESTING TECHNOLOGY<br>SEE PROJECT M 78 6350 FOR STATUS.  | 500.0              | 113.4                   | 386.6                               | SEP 77                           | JUN 78                          |
| M 75 6350  | MATERIALS TESTING TECHNOLOGY (MTT)<br>NO STATUS REPORT RECEIVED. SEE PROJECT M 78 6350.  | 3,500.0            | 695.2                   | 2,750.5                             | DEC 75                           | JUN 78                          |
| M 76 6350  | MATERIALS TESTING TECHNOLOGY (MTT)<br>SEE PROJECT M 78 6350 FOR STATUS.  | 4,083.0            | 594.5                   | 3,431.7                             | DEC 76                           | JUN 78                          |
| M 77 6350  | MATERIALS TESTING TECHNOLOGY<br>SEE PROJECT M 78 6350 FOR STATUS.  | 4,000.0            | 916.6                   | 2,709.1                             | MAY 78                           | JUN 79                          |
| M 78 6350  | MATERIALS TESTING TECHNOLOGY<br>SEE INDIVIDUAL TASKS BELOW FOR STATUS.   | 4,500.0            | 163.0                   | 280.9                               | JUN 79                           | JUN 79                          |
| M 78 6350A | INSPECTION DEVICE FOR EXPLOSIVE CHARGE IN SHELL<br>SIGNIFICANT PROGRESS HAS BEEN ACCOMPLISHED. THE SHELL SCANNER WAS ASSEMBLED, POWER DRIVE CONNECTED TO THE COMPUTER AND TESTS RUN ON THE SCANNING MOTION. THE LIFT MOTION WAS FOUND TO BE TOO SLOW. THE PROBLEM WILL BE CORRECTED BY CHANGING THE PULLEYS. | 0.0                | 0.0                     | 0.0                                 |                                  | JUN 79                          |
| M 78 6350B | COMPUTERIZED COLOR MATCHING SYSTEM<br>THE CONTRACTOR HAS INDICATED THAT THE STABILITY AND REPEATABILITY OF BOTH THE MS-2000 AND D-54 SPECTROPHOTOMETERS FAR EXCEEDS THEIR PREDECESSORS. THE LATEST SPECTROPHOTOMETER WHICH IS BEING INFORMALLY EVALUATED HAS BEEN INTERFACED WITH A COMPUTER.                | 0.0                | 0.0                     | 0.0                                 |                                  | JUN 79                          |
| M 78 6350C | FABRIC LOAD ELONGATION AND SHEAR TESTING DEVICE<br>THE BIAXIAL TENSILE AND SHEAR TESTING MACHINE IS OPERATIONAL AND APPEARS ADEQUATE FOR TESTING MOST ARMY FABRICS. THE DIFFICULTIES BEING EXPERIENCED WITH THE CLAMPING OF HEAVY-WEIGHT FABRICS WILL SOON BE RESOLVED.                                      | 0.0                | 0.0                     | 0.0                                 |                                  | JUN 79                          |
| M 78 6350D | NOT FOR E-BEAM FOIL WINDOWS<br>IN HOUSE TESTS. USING AN OPTICAL SCANNING, DID NOT SHOW ANY HOT SPOTS CORRESPONDING TO A TEMP. GRADIENT OF 30 DEGREES CENTIGRADE. A TEMPERATURE GRADIENT OF 300 DEGREES CENTIGRADE IS ALLOWABLE WITHOUT DAMAGING THE FOIL. THE TEST SHOWS UNIFORM THICKNESS.                  | 0.0                | 0.0                     | 0.0                                 |                                  | JUN 79                          |
| M 78 6350E | IN TESTING OF PCB'S AND MICROCIRCUITS<br>THE TWO SENSOR SYSTEM, LCP 200T AND TO-5, PROVED TO BE ACCEPTABLE WHEN FUNCTIONAL TESTED IN A PRODUCTION ENVIRONMENT USING PRODUCTION PERSONNEL. RESULTS INDICATED OVER 90% CONFIDENCE LEVELS IN LOCATING THE FAILURE SOURCE.                                       | 0.0                | 0.0                     | 0.0                                 |                                  | JUN 79                          |



MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
SUMMARY PROJECT STATUS REPORT  
1ST SEMIANNUAL SUBMISSION CY 78 RCB DRCHT-301

| PROJ NO.   | TITLE + STATUS   | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|------------|--|--------------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| M 78 6350F | AUTOMATED ANTENNA PATTERN MEASUREMENT<br>THE EQUIPMENT FOR THIS PROJECT HAS BEEN PROCURED. THE SYSTEM HARDWARE TEST MEASUREMENTS IS SCHEDULED TO BE COMPLETE 31 AUGUST 1978. NO MAJOR PROBLEMS ARE ANTICIPATED.  | 0.0                | 0.0                     | 0.0                                 |                                  | JUN 79                          |
| M 78 6350G | SET-BACK DRAG TESTER FOR 8-A DEVICES<br>THIS TASK WAS ONLY RECENTLY INITIATED. THE TESTER TO BE DEVELOPED UNDER THIS PROJECT IS INTENDED TO OPTIMIZE THE DESIGN FOR THE BULOVA PRODUCTION LINE, THEREBY GREATLY REDUCING THE TEST TIME. THE TESTER IS SCHEDULED TO BE EVALUATED 15 OCT. 1978.                          | 0.0                | 0.0                     | 0.0                                 |                                  | JUN 79                          |
| M 78 6350H | GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC ANALYSIS OF CARBORANE<br>AN OPTIMUM GAS - LIQUID CHROMATOGRAPHIC PROCEDURE HAS BEEN DEVELOPED FOR ASSAYING IN-HEXYLCARBORANE. ACTUAL GC/MC ANALYSIS OF IMPURITIES HAS NOT BEEN INITIATED DUE TO INSTR. PROBLEMS. THE COMPUTER PROGRAM FOR THESE EVALUATIONS HAVE BEEN IMPROVED. | 0.0                | 0.0                     | 0.0                                 |                                  | JUN 79                          |
| M 78 6350I | NOT EOPT FOR RESIDUAL STRESS MEASUREMENTS<br>THE EQUIPMENT FABRICATION FOR THIS PROJECT HAS BEEN COMPLETED. THE PHASE II EFFORT IS ESSENTIALLY COMPLETE WITH THE EXCEPTION OF THE FINAL REPORT. AN EQUIPMENT REVIEW WAS CONDUCTED AT THE CONTRACTORS FACILITIES MARCH 1-3.   | 0.0                | 0.0                     | 0.0                                 |                                  | JUN 79                          |
| M 78 6350J | LASER SCAN SYSTEM<br>THE AUTOMATED INSPECTION SYSTEM HAS BEEN INSTALLED, TESTED, AND ACCEPTED.   | 0.0                | 0.0                     | 0.0                                 |                                  | JUN 79                          |
| M 78 6350K | OPTICAL INSPECTION OF M42 GRENADES<br>THE FINAL PHOTO DETECTOR ARRAY CONFIGURATION HAS BEEN BREADBOARDED AND WIRED INTO AN ELECTRONIC THRESHOLDING DEVICE. THE SYSTEM HAS BEEN TESTED AND FOUND CAPABLE OF MONITORING THE RIBBON AND THE SLIDE.  | 0.0                | 0.0                     | 0.0                                 |                                  | JUN 78                          |
| M 78 6350L | ACCEPTANCE TESTING OF CHEMICAL ALARM COMPONENTS<br>NO DIFFICULTIES HAVE BEEN EXPERIENCED TO DATE IN ESTABLISHING TESTS FOR ANY OF THE COMPONENTS.  | 0.0                | 0.0                     | 0.0                                 |                                  | JUN 78                          |
| M 78 6350M | HOLOGRAPHIC DEFECT DETECTION BY PRESSURE STRESSING<br>AN BREADBOARD HOLOGRAPHIC SYSTEM ASSEMBLY CONTRACT HAS BEEN AWARDED. THIS BREADBOARD SYSTEM WILL BE USED TO EVALUATE THE EFFECTIVENESS OF HOLOGRAPHIC PROJECTILE INSPECTION. THIS EVALUATION IS SCHEDULED FOR JULY OR AUGUST.                                    | 0.0                | 0.0                     | 0.0                                 |                                  | JUN 79                          |
| M 78 6350N | RADAR METHOD FOR SENSING AND OUTPUT TESTING OF DETONATORS<br>A CONTRACT HAS BEEN AWARDED FOR THE DESIGN AND FAB. OF A BENCH MODEL NON-ELECTRIC DETONATOR TEST SYSTEM. THE CONTRACT IS 90% COMPLETE. A FIRING BOX MOCK-UP, 70CMZ RADAR AND THE BREADBOARD ELECTRONICS HAVE BEEN FAB. AND ASSEMBLED THIS ENGR. MODEL.    | 0.0                | 0.0                     | 0.0                                 |                                  | JUN 79                          |

S U M M A R Y P R O J E C T S T A T U S R E P O R T  
1ST SEMIANNUAL SUBMISSION CY 76 RCS DRCMT-301

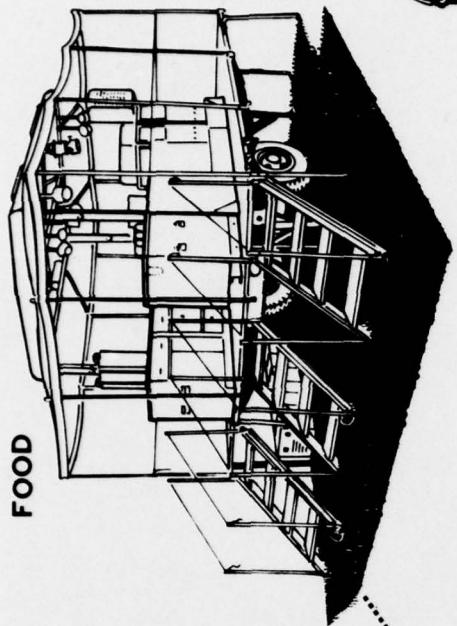
PROJ NO, TITLE + STATUS

| PROJ NO,   | TITLE + STATUS   | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|------------|--|--------------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| M 76 63500 | HOT FORGED WALL VARIATION MEASUREMENT<br>THE DESIGN OF THE INSPECTION APPARATUS AND THE SPECIAL HIGH TEMPERATURE TRANSDUCER HAS BEEN COMPLETED. FROM THE TRIAL TESTS IT WAS DETERMINED THAT PRESSURE COUPLING SHOULD BE ADEQUATE. TO BE SURE, A GRAPHITE INJECTION BACKUP IS BEING DESIGNED. | 0.0                | 0.0                     | 0.0                                 |                                  | JUN 78                          |
| M 77 6370  | OPTIMIZATION OF MMT PROGRAM EFFECTIVENESS<br>88500 WERE TRANSFERRED TO THE ODD METALS AND CERAMICS INFORMATION ANALYSIS CENTER, NO PURPOSE FOR THIS TRANSFER WAS STATED.   | 16.0               | 0.0                     | 8.5                                 | JUN 79                           | JUN 79                          |
| M 76 6362  | *HEALTH/SAFETY PROCS PROCEDURES-MFR OF DEPLETED URANIUM COMP CAMERA READY COPY IN PREPARATION. ALL WORK COMPLETED. LETTERKENNY ARMY DEPOT WILL PRINT AND ISSUE AS DARCOM HND8K.  | 60.0               | 0.0                     | 60.0                                | DEC 76                           | SEP 78                          |

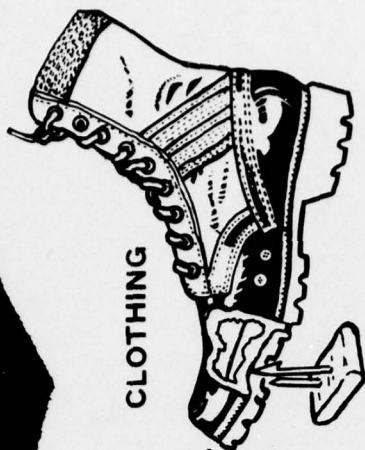
MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
SUMMARY PROJECT STATUS REPORT  
1ST SEMIANNUAL SUBMISSION CY 76 RCS DRCHT-301

| PROJ NO.  | TITLE + STATUS  | AUTHORIZED<br>(\$000) | CONTRACT<br>VALUES<br>(\$000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(\$000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|---|-----------------------|-------------------------------|---|---|--|
| A 74 100M | UNIAPT EVALUATION NC/CAM<br>THIS PROJECT IS COMPLETE AND DEMONSTRATED THAT THE BEST METHOD<br>FOR OPERATING AN NC TAPE PREPARATION SYSTEM IS THE USE OF A TIME<br>SHARE SYSTEM.   | 100.0                 | 68.5                          | 31.5  | DEC 74                                    | SEP 78                                   |
| A 77 5052 | ARMY ENGINEERING DESIGN HANDBOOKS<br>***** DELINQUENT STATUS REPORT *****   | 363.0                 | 0.0                           | 65.0  | JUN 78                                    | DEC 78                                   |
| A 74 5052 | ARMY ENG DESIGN HANDBOOKS FOR PRODUCTN SUPPORT<br>***** DELINQUENT STATUS REPORT *****  | 331.0                 | 0.0                           | 329.0   | JUN 76                                    | DEC 78                                   |
| A 75 5052 | ARMY ENG DESIGN HANDBOOKS FOR PRODUCTN SUPPORT.<br>***** DELINQUENT STATUS REPORT *****   | 340.0                 | 0.0                           | 305.0   | JUN 77                                    | DEC 78                                   |
| A 76 5052 | ARMY ENG DESIGN HANDBOOKS FOR PRODUCTN SUPPORT<br>***** DELINQUENT STATUS REPORT *****  | 454.0                 | 0.0                           | 0.0   | JUN 78                                    | DEC 78                                   |
| A 77 5052 | ARMY ENG DESIGN HANDBOOKS FOR PRODUCTN SUPPORT<br>***** DELINQUENT STATUS REPORT *****  | 305.0                 | 0.0                           | 0.0   | SEP 79                                    | SEP 79                                   |
| D 78 5052 | ARMY ENG DESIGN HANDBOOKS FOR PRODUCTN SUPPORT<br>NO STATUS REPORT RECEIVED. THERE NEVER HAS BEEN A STATUS REPORT<br>RECEIVED ON THIS SERIES OF PROJECTS. THE CONTRACTOR REPORTS ARE<br>SENT IN LETTER FORM TO HQ.DARCUM. | 550.0                 | 0.0                           | 0.0   | NOV 79                                    | NOV 78                                   |

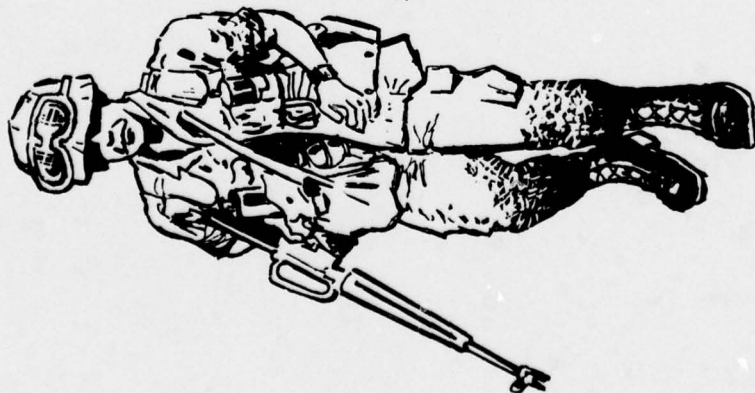
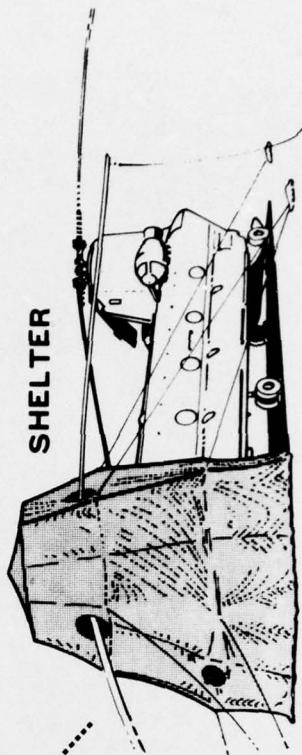
FOOD



CLOTHING



SHELTER



NATICK R&D COMMAND  
(NARADCOM)



## NATICK RESEARCH AND DEVELOPMENT COMMAND

| FISCAL<br>YEAR     | NO. OF<br>PROJECTS | AUTHORIZED<br>FUNDS<br>( \$ ) | CONTRACT FUNDING         |                         | INHOUSE FUNDING          |                         |
|--------------------|--------------------|-------------------------------|--------------------------|-------------------------|--------------------------|-------------------------|
|                    |                    |                               | *<br>ALLOCATED<br>( \$ ) | *<br>EXPENDED<br>( \$ ) | *<br>ALLOCATED<br>( \$ ) | *<br>EXPENDED<br>( \$ ) |
| 74                 | 1                  | 110,400                       | 77,200                   | 77,200 (100%)           | 33,200                   | 33,200 (100%)           |
| 75                 | 0                  | 0                             | 0                        | 0 ( 0%)                 | 0                        | 0 ( 0%)                 |
| 76                 | 2                  | 527,700                       | 404,800                  | 320,500 ( 79%)          | 122,900                  | 106,200 ( 86%)          |
| 77                 | 0                  | 0                             | 0                        | 0 ( 0%)                 | 0                        | 0 ( 0%)                 |
| 77                 | 1                  | 215,000                       | 160,900                  | 0 ( 0%)                 | 54,100                   | 27,600 ( 51%)           |
| 78                 | 0                  | 0                             | 0                        | 0 ( 0%)                 | 0                        | 0 ( 0%)                 |
| TOTAL              | 4                  | 853,100                       | 642,900                  | 397,700 ( 61%)          | 210,200                  | 167,000 ( 79%)          |
| AUTHORIZED FUNDING |                    |                               | CONTRACT ALLOCATED 75%   | INHOUSE ALLOCATED 24%   |                          |                         |

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
SUMMARY PROJECT STATUS REPORT  
1ST SEMIANNUAL SUBMISSION CY 76 RCS ORCMT-301

| PROJ NO.  | TITLE + STATUS   | AUTHORIZED<br>(\$000) | CONTRACT<br>VALUES<br>(\$000) | EXPENDED<br>LABOR AND<br>MATERIAL<br>(\$000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|--|-----------------------|-------------------------------|--|---|--|
| A 74 200N | MFG OF TURNING SHOE LASTS USING NUMERICAL CONTROL.<br>THE PROBLEMS WITH THE CONTRACTOR HAVE CONTINUED, NECESSARY ACTION<br>TO TERMINATE THE CONTRACT ARE PLANNED.  | 110.4                 | 77.2                          | 33.2   | MAR 76                                    | SEP 78                                   |
| 7 76 8035 | AUTOMATED PRODUCTION OF INSULATED FOOTWEAR<br>COMPOUND TRIALS ON THE DESMA INJECTOR WERE COMPLETED<br>SUCCESSFULLY, FOUR BOOT HOLDING STATIONS WERE FABRICATED, DESIGN<br>WORK FOR AUTOMATING THE OPERATION OF THE INJECTOR AND THE FOUR<br>UNIT STATIONS WAS COMPLETED. | 390.0                 | 320.5                         | 63.9   | OCT 78                                    | SEP 79                                   |
| 7 76 8036 | NUMERICALLY CONTROLLED HELMET DIE SINKING<br>WORK IS BEING PERFORMED UNDER CONTRACT TO PICATINNY, PICATINNY<br>HAD PROVIDED A FIRM DELIVERY DATE FOR THE HOLDS WHICH WAS NOT<br>MET, AS OF 22 JUN 78, NO WORK WAS BEING DONE.  | 137.7                 | 84.3                          | 42.3   | SEP 77                                    | SEP 78                                   |
| 0 77 8053 | CADAM OF PARACHUTE HARDWARE<br>THE CONTRACTOR HAS STARTED THE INFORMATION GATHERING EFFORT. AN<br>OPERATIONAL FORGING ACTIVITY HAS SET UP, COMPUTER GRAPHICS<br>DISPLAY EQUIPMENT HAS BEEN RECEIVED, PRELIMINARY SOFTWARE TO<br>DRIVE THE GRAPHICS SYSTEM WAS GENERATED. | 215.0                 | 160.9                         | 27.6   | MAR 78                                    | SEP 80                                   |



**MISSILE R&D COMMAND**  
**MISSILE MATERIEL READINESS COMMAND**  
**(MIRADCOM, MIRCOM)**

# MISSILE MATERIEL READINESS COMMAND

CURRENT FUNDING STATUS, 1ST FY78

| FISCAL YEAR        | NO. OF PROJECTS | AUTHORIZED FUNDS (\$)  | * ALLOCATED (\$) | C O N T R A C T F U N D I N G EXPENDED (\$) | * ALLOCATED (\$) | I N H O U S E F U N D I N G EXPENDED (\$) | * |
|--------------------|-----------------|------------------------|------------------|---|------------------|---|---|
| 75                 | 1               | 175,000                | 132,400          | 132,400 (100%)                              | 42,600           | 42,600 (100%)                             |   |
| 76                 | 12              | 5,087,100              | 2,666,800        | 2,268,100 (84%)                             | 2,420,300        | 854,900 (35%)                             |   |
| 77                 | 6               | 1,537,000              | 595,100          | 534,100 (89%)                               | 941,900          | 563,000 (59%)                             |   |
| 77                 | 19              | 7,158,700              | 5,686,900        | 3,932,200 (69%)                             | 1,871,800        | 917,000 (62%)                             |   |
| 78                 | 32              | 13,143,700             | 5,759,400        | 1,324,700 (23%)                             | 7,384,300        | 653,400 (8%)                              |   |
| TOTAL              | 70              | 27,101,500             | 14,840,600       | 8,187,500 (55%)                             | 12,260,900       | 3,030,900 (24%)                           |   |
| AUTHORIZED FUNDING |                 | CONTRACT ALLOCATED 55% |                  | INHOUSE ALLOCATED 45%                       |                  |   |   |



MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
S U M M A R Y P R O J E C T S T A T U S R E P O R T  
1ST SEMIANNUAL SUBMISSION CY 76 HCS DRCM-301

| PROJ NO.  | TITLE + STATUS  | AUTHORIZED<br>(8000) | CONTRACT<br>VALUES<br>(8000) | EXPENDED<br>LABOR AND<br>MATERIAL<br>(8000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|---|----------------------|------------------------------|---|---|--|
| 3 76 3073 | MANUFACT TECHNIQUES FOR STATIC SWITCHES (CAN)<br>PMC CORPORATION ASSEMBLED 16 PIN DUAL-IN-LINE PACKAGES USING TEXAS INSTRUMENTS DALLINGTON TRANSISTOR ARRAY CHIPS. THE UNITS SUCCESSFULLY PASSED TESTS AT -55C, 25C AND 80 DEGREES C. SWITCH IS FOR A MULTI-TUBE ROCKET LAUNCHER.                                       | 125.0                | 69.6                         | 51.5  | JUL 76                                    | OCT 78                                   |
| R 76 3075 | INFRARED TESTING OF PC BOARDS AND MICROCIRCUITS<br>THE CONTRACT RFP HAS BEEN PREPARED AND WILL BE MAILED ON JUNE 29. THE OBJECTIVE OF THIS PROJECT IS TO ESTABLISH A LOW COST EFFICIENT SYSTEM FOR INFRARED TESTING OF PRINTED CIRCUIT BOARDS AND HYBRID MICROELECTRONIC MODULES.                                       | 335.0                | 0.0                          | 27.0  | AUG 79                                    | AUG 79                                   |
| R 77 3076 | QTY PROD TECH FOR COMPOSITE ROCKET MOTOR COMPONENTS<br>100 CASES HAVE BEEN SUCCESSFULLY TESTED. THIS PROJECT HAS ESTABLISHED IMPROVEMENTS IN FILAMENT WINDING, WINDING SPEED, RESIN CONTROL, AND CENTER PULL DEPLOYMENT OF THE 16 END ROVING TECHNIQUES HAVE BEEN DEMONSTRATED. A DRAFT FINAL REPORT WAS FINISHED       | 90.0                 | 69.6                         | 20.4  | SEP 77                                    | JUL 77                                   |
| R 77 3091 | APPLICATION OF CAM TO AFFIXING ELEC CONNECTORS TO CABLES<br>MARTIN MARIETTA COMPLETED 95% OF THE MECHANICAL ASSEMBLY AND 90% OF THE CONTROL SYSTEM. A TRANSFER CONVEYOR IS BEING DESIGNED AND BUILT. EXTENSION IS NEEDED FOR X-Y TABLE MODIFICATION AND ADDITION OF A SLACK-PULLER, EXTENSION AT NO COST IS RECOMMENDED | 140.0                | 137.2                        | 2.8   | AUG 77                                    | DEC 78                                   |
| R 77 3112 | MFG MULTILAYER RIGID-FLEX HARNESS<br>A CONTRACTOR TO BE SELECTED WILL INTEGRATE FLAT CABLE INTERCONNECTS WITH MULTILAYER PRINTED WIRING BOARDS TO REDUCE USE OF CONNECTORS. PROCUREMENT PACKAGES WERE COMPLETED. THE RIGID-FLEX ASSEMBLY WILL IMPROVE RELIABILITY AND CUT COST.   | 350.0                | 0.0                          | 20.0  | SEP 78                                    | SEP 78                                   |
| R 78 3116 | IMP PROD METHOD FOR ROCKETTE AIR DEF SEEKER OPTICS AND DETECT<br>THE CONTRACT HAS NOT YET BEEN AWARDED. THE TASK WILL BE TO ESTABLISH IMPROVED PRODUCTION METHODS FOR GYRO OPTICS AND DETECTOR ASSEMBLIES FOR THE STINGER AIR-DEFENSE SEEKER. WILL WORK ON THE ROCKETTE OPTICS, DETECTOR AND ELECTRONICS.               | 500.0                | 0.0                          | 0.0   | SEP 79                                    | SEP 80                                   |
| R 77 3121 | APPLICATION AND NOT OF LINE PIPE FOR MOTOR COMPONENTS<br>FIVE PHASES OF THIS 10 PHASE PROGRAM HAVE BEEN COMPLETED WHICH INCLUDES  | 325.0                | 254.1                        | 70.9  | NOV 78                                    | SEP 79                                   |
| R 78 3121 | APPLICATION AND NOT OF LINE PIPE FOR MOTOR COMPONENTS<br>SEE PROJECT NO. R 77 3121 FOR STATUS.  | 300.0                | 240.0                        | 25.0  | SEP 79                                    | SEP 79                                   |
| R 77 3126 | *PROCESSING OF LASER OPTICAL CERAMICS<br>AMRC GREW LARGE NEODIMUM DOPED YTTTRIUM-ALUMINA-GARNET INGOTS IN AN ELECTRIC RESISTANCE FURNACE. THE INGOTS WERE CUT INTO 3MM X 30MM RODS, POLISHED, AND TESTED IN A LASER AT ECOM. THEY LABED.  | 132.0                | 132.0                        | 0.0   | JUL 78                                    | JUN 78                                   |

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
SUMMARY PROJECT STATUS REPORT  
1ST SEMIANNUAL SUBMISSION CY 76 HCS DRCHT-301

| PROJ NO.  | TITLE + STATUS   | AUTHORIZED<br>(\$000) | CONTRACT<br>VALUES<br>(\$000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(\$000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|--|-----------------------|-------------------------------|---|---|--|
| R 70 3126 | PROCESSING OF LASER OPTICAL CERAMICS<br>AMRC INSTALLED AN IMPROVED HEATER IN ITS ZONE-CONTROLLED FURNACE TO PRODUCE THE CORRECT GRADIENT TOP-TO-BOTTOM. A STEEP UPWARD GRADIENT IS NEEDED. A SLOW COOLING RATE MUST ALSO BE USED TO PROVIDE CORRECT CHEMISTRY AT THE DIFFUSION FRONT.  | 122.0                 | 78.6                          | 10.0  | AUG 79                                    | AUG 79                                   |
| R 77 3133 | PROD OF LITHIUM FERRITE PH SHIFTER FOR PHASED ARRAY RADARS<br>RAYTHEON RESEARCH IS DOING MATERIALS R+D ON 12 POWDERS AND EXPERIMENTING WITH CO-FIRING CONDITIONS. THIS IS MATERIALS R+D AND NOT PROCESS SCALE-UP. MATERIALS ARE Li <sub>2</sub> ZN <sub>2</sub> Ti <sub>2</sub> Al <sub>2</sub> Si <sub>2</sub> IN <sub>2</sub> CR. CO-FIRING WILL BE USED TO MAKE LI-SAFE TOROIDAL FOR PHASE ARRAY RADARS | 215.0                 | 135.3                         | 36.0  | SEP 78                                    | SEP 78                                   |
| R 70 3133 | PROD OF LITHIUM FERRITE PH SHIFTER FOR PHASED ARRAY RADAR<br>MIRACOM WILL HAVE THE OPTION OF EXTENDING RAYTHEON'S BASIC CONTRACT FOR ANOTHER YEAR, AS A FOLLOW-ON TO THE FY77 EFFORT. ADDITIONAL MATERIALS R+D SHOULD BE DONE WITH R+D FUNDS TO ESTABLISH SUITABLE MATERIALS BEFORE EXERCISING THIS OPTION.  | 325.0                 | 0.0                           | 0.0   | SEP 79                                    | SEP 79                                   |
| 3 75 3134 | *PRODUCTION OF FIELD EFFECT ELECTRON EMITTERS<br>PROCEDURES WERE DEVELOPED FOR GROWING COMPOSITES OF URANIUM AND TUNGSTEN SUCH THAT APPROX 10 MILLION UNIFORMLY SPACED TUNGSTEN FIBERS WERE CONTAINED IN EACH SQUARE CENTIMETER OF SURFACE AREA. TEN PATENTS WERE ISSUED COVERING OPER OF MATL AS FIELD EMI  | 175.0                 | 132.4                         | 42.6  | MAY 77                                    | AUG 78                                   |
| R 77 3134 | *MFG METHODS FOR PROD OF FIELD EFFECT ELECTRON EMITTERS<br>THE PRIMARY OBJECTIVE OF THIS PROJECT WAS TO DEVELOP PROCEDURES FOR PLATING CLOSELY SPACE CONTROL GRIDS ON OXIDE-METAL COMPOSITES. A COMPUTER PROGRAM HAS BEEN DEV TO ASSIST IN DETERMINING PROPER PIN HEIGHT AND SPACING.  | 99.7                  | 99.7                          | 0.0   | OCT 78                                    | AUG 78                                   |
| 3 77 3135 | PROCESS DEVELOPMENT FOR CARBORANE MFG<br>NMC PREPARED FROM THE DECABORANE PRODUCED BY THE PYROLYSIS PROCESS IN THE 4-INCH LOOP REACTOR WAS EVALUATED IN THE VIPER PROPellant FORMULATION AND WAS FOUND TO BE ENTIRELY SATISFACTORY. WASHOUT OF THE 82 AND 810 REACTORS WILL BE REQUIRED EVERY 24 HR  | 800.0                 | 0.0                           | 493.0   | SEP 78                                    | SEP 78                                   |
| 3 76 3135 | PROCESS DEVELOPMENT FOR CARBORANE MANUFACTURE<br>N-PROPYLETHYER WAS EVALUATED AS A REPLACEMENT FOR DIOXANE. THE NMC PRODUCED WITH THIS CHEMICAL MET SPECS BUT EXCESSIVE GASSING OCCURED WHEN IT WAS USED IN THE VIPER PROPellant COMPOSITION. FURTHER PURIFICATION OF THE NMC WOULD BE REQUIRED.   | 2,000.0               | 367.0                         | 541.0   | SEP 78                                    | SEP 78                                   |
| R 77 3135 | PROCESS DEVELOPMENT FOR CARBORANE MANUFACTURE<br>ALL THE MAJOR EQUIPMENT REQUIRED HAS BEEN ORDERED. DELIVERY OF THE INCINERATOR AND WASTE DISPOSAL SYSTEM DELIVERIES WERE DELAYED. MINOR CHANGES WERE REQUIRED BY THE PENN STATE DEPT OF ENVIRONMENTAL RESOURCES.  | 2,000.0               | 2,000.0                       | 0.0   | SEP 78                                    | OCT 79                                   |

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
SUMMARY PROJECT STATUS REPORT  
1ST SEMIANNUAL SUBMISSION CY 78 RCB DRCHT-301

| PROJ NO.  | TITLE + STATUS   | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|-----------|--|--------------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| R 78 3136 | IMP. MANUFACTURING PROCESSES FOR COMPLIANT BEARING GYRO<br>THIS EFFORT WILL DEVELOP IMPROVED PROCEDURES FOR FABRICATING COMPLIANT BEARING GYROs. A PROCUREMENT PACKAGE HAS BEEN DEVELOPED. PROBLEMS WERE ENCOUNTERED WITH AR 5-5.  | 450.0              | 0.0                     | 20.0                                | DEC 79                           | DEC 79                          |
| R 77 3138 | *ACOUSTICAL HOLOGRAPHIC PASSIVE NOT-CERAMIC RADOME PROJECT COMPLETED. THE FAB. OF THE ACOUSTICAL IMAGING SYSTEM SCANNER CONTROL AND PROCESSING UNIT WAS COMPLETED. THE HOLOGRAPHIC 200 SYSTEM WAS MODIFIED TO PROVIDE B-SCAN CAPABILITIES. ALSO, 3-D PACKAGE WAS DESIGNED AND FAB.   | 90.0               | 49.0                    | 45.0                                | NOV 77                           | AUG 78                          |
| R 78 3140 | IMP MANUFACTURING PROCESSES FOR SILICON VIDEOCONS<br>ONE OF THE MM+T SILICON TARGET VIDEOCONS MADE BY RDA WAS INSTALLED IN THE ADVANCED TELEVISION SEEKER FOR THE HELFIRE MISSILE. MARTIN MARIETTA WILL MAKE THE EVALUATION. SIX TUBES ARE BEING EVALUATED BY NIGHT VISION LABS (NVL).                                     | 149.0              | 0.0                     | 102.0                               | MAR 78                           | SEP 78                          |
| 3 76 3141 | FLUIDICS MANUFACTURING AND ASSEMBLY PROCESSING<br>ON INSPECTION OF THE SUPPLY PRESSURE DROPPING ORIFICES SHOWED OUT OF TOLERANCE BY AS MUCH AS 75%. BOND QUALITY IS DEPENDENT ON THE PERCENTAGE OF LCN IN THE FINAL DEOXIDIZING STEP. WITH PRESENT PROCESS A 50% YIELD CAN BE EXPECTED.                                    | 270.0              | 208.2                   | 30.0                                | JUN 77                           | SEP 78                          |
| R 77 3145 | *COMPUTER AIDED SPECKLE HOLOGRAPHIC COMP VOID DET SYSTICAN)<br>THIS PROJECT IS COMPLETE. THE FINAL REPORT HAS BEEN PUBLISHED. THE RESULTING SYSTEM HAS THE CAPABILITY OF ANALYZING SPECKLE INTERFEROGRAMS OF FLAMED CYLINDERS.   | 150.0              | 75.0                    | 75.0                                | OCT 78                           | AUG 78                          |
| 3 76 3147 | ADDITIVE PROCESSES FOR FABRICATION OF PRINT CIRCUIT BOARDS<br>ACCOMPLISHMENTS WERE NOT UPDATED FROM LAST REPORT PERIOD.  | 500.0              | 337.3                   | 0.0                                 | JUN 77                           | JUN 78                          |
| R 78 3147 | ADDITIVE PROCESSES FOR FABRICATION OF PRINT CIRCUIT BOARDS<br>TWO FORMS OF THIN CLADS AND THREE TYPES OF BARE BOARDS WERE SHOWN TO MEET ALL PHYSICAL TESTS REQUIRED. ALL OBJECTIVES OF THE TECHNICAL REQUIREMENTS HAVE BEEN MET. THE INDUSTRY-WIDE DEMONSTRATION ON 25-26 OCT 78 WILL CONCLUDE THE EFFORT.                 | 250.0              | 171.1                   | 0.0                                 | JUN 78                           | OCT 78                          |
| R 78 3150 | DEVEL METHOD FOR UTILIZING UV CURED CONFORMAL COATINGS<br>THE PROCUREMENT PACKAGE REACHED PURCHASING 1 JUNE 77.  | 126.0              | 0.0                     | 0.0                                 | SEP 78                           | AUG 78                          |
| R 77 3160 | PROD CLEANLINESS CRITERIA AND PROCESSES FOR PRINT WIRING BRD<br>A CONTRACT WAS AWARDED TO MARTIN MARIETTA CORP. ON 24 APRIL 78 AND NO WORK HAS REPORTED. THE TASKS ARE TO IDENTIFY CONTAMINANTS FOUND ON PRODUCTION BOARDS, DEVELOP METHODS TO REMOVE THEM, AND DEVISE TESTS TO DETERMINE LEVELS OF RESIDUAL CONTAMINANTS. | 150.0              | 156.7                   | 0.0                                 | SEP 78                           | MAR 79                          |

SUMMARY PROJECT STATUS REPORT  
1ST SEMIANNUAL SUBMISSION CY 78 RCB DRCHT-301

| PROJ NO.  | TITLE + STATUS  | AUTHOR-<br>RIZED<br>(\$000) | CONTRACT<br>VALUES<br>(\$000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(\$000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|---|-----------------------------|-------------------------------|---|---|--|
|           |   |                             |                               |   |   |  |
| R 77 3165 | PROD PROCESS + TECHNIQUES FOR SEALING HYBRID MIC-CIR PACK<br>THE PHASE I EFFORT (INDUSTRY SURVEY) IS COMPLETE. A CONTRACT WAS<br>LET FOR THE FINE LEAK TESTER. A CONTRACT FOR THE ENCLOSURES IS IN<br>PROCESS. THE GROSS LEAK TESTER WAS FABRICATED. CAROUSEL AND OVEN<br>DESIGNS WERE COMPLETED.                                     | 210.0                       | 0.0                           | 189.0   | SEP 79                                    | JAN 79                                   |
| R 78 3165 | PROD PROCESS + TECHNIQUES FOR SEALING HYBRID MIC-CIR PACK<br>THE PURPOSE OF THIS PROJECT IS TO IMPROVE THE YIELD AND<br>PRODUCTION RATE OF HYBRID MICROELECTRONIC PACKAGE SEALING<br>OPERATIONS.  | 220.0                       | 9.5                           | 0.0   | NOV 79                                    | NOV 79                                   |
| R 78 3167 | PROD CONTROLS TO PREVENT PLATED-THROUGH HOLE CRACKING<br>THE CONTRACT HAS NOT YET BEEN AWARDED. THE WORK WILL ESTABLISH<br>TECHNIQUES FOR PLATING MULTILAYER CIRCUIT BOARDS TO MEET THE<br>THERMAL STRESS REQUIREMENTS OF MIL SPEC MIL-P-55640.   | 225.0                       | 0.0                           | 20.0  | MAR 79                                    | MAR 79                                   |
| R 77 3168 | PRODUCTION OF CIRCUIT BOARD HEAT PIPE<br>HUGHES AIRCRAFT IS STAMPING HEAT PIPE SHELLS, BRAZING METAL WICKS<br>TO THE TUBULAR SHELL, AND WORKING WITH EVACUATION AND PINCHOFF. A<br>3-WAY VACUUM VALVE CUT EVAC. TIME FROM 15 TO 5 MINUTES. EQUIPMENT<br>WAS BUILT AT HUGHES RATHER THAN PURCHASED. WORK IS OK                         | 172.0                       | 147.1                         | 20.0  | SEP 78                                    | SEP 78                                   |
| R 77 3169 | AUTO OPTICAL INSPECTION OF PC BOARDS AND COMPONENTS (CAM)<br>SCI HAS PROCURED A CLOSED CIRCUIT TV SYS AND INTERFACED IT WITH<br>THE COMPUTER IN PREPARATION TO SCAN PRINTED WIRING BOARDS.<br>CHRYSLER WORKS HAS PROGRESSED TO A POINT ALLOWING SIMPLE TASKS,<br>SUCH AS SOLDER BRIDGING, COMP. LEAD DIRECTION TO BE DETECTED.        | 275.0                       | 268.6                         | 0.0   | SEP 78                                    | NOV 78                                   |
| R 77 3170 | REPLACEMENT OF TPH-8156 AND TPH-8159 PROPELLANT<br>LABORATORY SIZE MIXES OF THE REPLACEMENT PROPELLANTS HAVE BEEN<br>SCALED UP TO 300 GALLON MIX SIZE. MECHANICAL PROPERTIES EXCEED<br>AND BALLISTIC PROPERTIES DUPLICATE, THE PROPERTIES OF THE OLD<br>PROPELLANTS.  | 185.0                       | 125.0                         | 60.0  | SEP 79                                    | SEP 78                                   |
| R 78 3170 | REPLACEMENT OF TPH-8156 AND TPH-8159 PROPELLANT<br>***** NO WORK ACCOMPLISHMENTS OR FUNDING STATUS RECEIVED BECAUSE<br>REPORT ON 78 EFFORT NOT RECEIVED AS SEPARATE ENTITY *****  | 190.0                       | 0.0                           | 0.0   | SEP 78                                    | SEP 78                                   |
| R 78 3171 | AUTO MONITOR AND CONTROL FOR WAVE SOLDERING MACHINES<br>A CONTRACTOR WILL DEVELOP AN AUTOMATIC CONTROLLER FOR A WAVE<br>SOLDERING MACHINE. IT WILL CONTROL ALL VARIABLES WITHIN PRESET<br>LIMITS. THE WORK SHOULD HAVE SUBSTANTIAL COMMERCIAL INTEREST.   | 450.0                       | 0.0                           | 20.0  | SEP 80                                    | SEP 80                                   |
| R 77 3183 | IMPROVED PROCESSES FOR INERTIAL GRADE G-REFLEX ACCELEROMETER<br>FINAL QUARTZ ACCELEROMETER CONFIGURATION IS SET. IT USES THE MOST<br>COST EFFECTIVE COMBINATION OF PROCESSES DEVELOPED BY SUNDSTRAND<br>TO IMPROVE BIAS STABILITY. SCREENING TESTS ON PILOT RUN WERE<br>COMPLETED. BIAS PERFORMANCE TEST AND ANALYSIS ARE IN PROGRESS | 165.0                       | 114.4                         | 9.3   | DEC 78                                    | JUL 78                                   |



S U M M A R Y P R O J E C T S T A T U S R E P O R T  
MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
1ST SEMI-ANNUAL SUBMISSION CY 78 RGS DRCMT-301

| PROJ NO.  | TITLE + STATUS  | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|-----------|---|--------------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| R 78 3103 | IMPROVED PROCESSES FOR INERTIAL GRADE GYROSCOPE ACCELEROMETER<br>A CONTRACT IS BEING NEGOTIATED WITH SUNDSTRAND. IT IS EXPECTED TO BE SIGNED BY 15 AUG 1978. THE CONTRACTOR WILL FOLLOW THE PRODUCTION METHODS SPECIFIED BY THE FY77 CONTRACT AT SUNDSTRAND.  | 185.0              | 0.0                     | 0.0                                 | JUL 80                           | JUL 80                          |
| R 77 3108 | *INFRARED IMAGING SEEKERS FOR THERMAL HOMOING MISSILES<br>TEXAS INSTRUMENTS MADE A STUDY OF DIFFERENT MATERIALS AND PRODUCTION METHODS FOR LOW COST INFRARED SEEKER HEADS. WILL INCLUDE DIAMOND TURNED AND ASPHERIC LENSES, AND AUTOMATIC METHODS FOR BUILDING AND ALIGNING THE DETECTOR, OPTICS, AND SCANNER.          | 450.0              | 446.0                   | 3.6                                 | MAR 79                           | MAR 79                          |
| R 78 3108 | INFRARED IMAGING SEEKERS FOR THERMAL HOMOING MISSILES<br>TEXAS INSTRUMENTS STARTED THE SECOND HALF OF ITS WORK ON SIMPLIFYING THE MANUFACTURE OF THE HELIFIRE SEEKER. 301 REPORT DOES NOT ADEQUATELY DESCRIBE ITS WORK OR PROGRESS.   | 500.0              | 450.0                   | 5.0                                 | MAR 79                           | MAR 79                          |
| R 78 3204 | INTERNAL SHEAR FORGING PROCESSES FOR MISSILE PRIME STRUCTURE<br>A PROCUREMENT PACKAGE HAS BEEN FINALIZED AND A CONTRACT IS EXPECTED TO BE AWARDED DURING SEP 1978.  | 350.0              | 275.0                   | 0.0                                 | OCT 80                           | OCT 80                          |
| R 77 3217 | AUTOMATED PROD. OF TRAVELING WAVE TUBES<br>LITTON SUCCESSFULLY COMPLETED THE 6 MONTH BASIC CONTRACT. THEY FABRICATED A RING LOOP TWT WHICH MET PATRIOT PERFORMANCE SPECIFICATIONS. A SCALED DOWN PILOT LINE WILL BE BUILT. TEN TUBES WILL BE BUILT.   | 498.0              | 316.8                   | 25.0                                | FEB 79                           | MAR 80                          |
| R 78 3218 | REDUCE THE FINISHING COST OF FUSED SILICA RADOMES<br>PROCUREMENT ACTIVITIES AND FABRICATION OF KILN AND CASTING FACILITY HAS BEEN COMPLETED. THREE PLASTER MOLDERS HAVE BEEN POURED AND ONE SILICA RADOME WAS CAST. PROCESSING PARAMETERS OF IMPORTANCE ARE RELATIVE DRYNESS OF THE MOLD AND MANUAL REMOVAL.            | 312.7              | 12.7                    | 56.4                                | OCT 79                           | OCT 79                          |
| S 76 3224 | *MM+T PROGRAM ON SCREENING OF ELECTRONIC COMPONENTS<br>THE MOISTURE ANALYSIS TEST (MIL-STD-883 METHOD 1008) HAS BEEN IMPLEMENTED IN MIL-STD-883 METHOD 5004 AND 5008 FOR MICROCIRCUITS AND HYBRID MICROCIRCUITS RESPECTIVELY. MOBILE ION DETECTION TESTS AND NITRIDE STABILITY TEST WILL BE IMPLEMENTED IN LSI DESIGNS. | 224.4              | 224.4                   | 0.0                                 | MAY 77                           | AUG 78                          |
| S 76 3225 | PROD METH FOR MOUNTING NON-AXIAL LEAD COMPONENTS<br>MARTIN MARIETTA DEVELOPED A PANTOGRAPH INSERTION MACHINE FOR APPLYING DIPs AND TO-5 PACKAGES TO PRINTED CIRCUIT BOARDS. BUT IT REQUIRES PACKAGE TO BE INSERTED INTO A CARRIER BY HAND. ANOTHER MACHINE IS NEEDED TO INSERT THE DIP + TO5 INTO THE LUCASERT.         | 200.0              | 195.0                   | 1.0                                 | JUL 77                           | JUN 78                          |
| S 76 3227 | LOW COST PROD METH FOR HAND HYBRID CHIP W/TAPE CAR LEAD FR<br>SEE SUBTASKS BELOW.   | 550.0              | 332.9                   | 20.0                                | NOV 77                           | OCT 78                          |

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
SUMMARY PROJECT STATUS REPORT  
1ST SEMIANNUAL SUBMISSION CY 76 RCS DRCHT-301

| PROJ NO.   | TITLE + STATUS  | AUTHORIZED<br>VALUES<br>(\$000) | CONTRACT<br>VALUES<br>(\$000) | EXPENDED ORIGINAL<br>LABOR AND<br>MATERIAL<br>(\$000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|------------|---|---------------------------------|-------------------------------|---|---|--|
| 3 76 3227A | MONEYWELL WORK<br>MONEYWELL HAS COMPLETED WORK ON ADAPTION OF TAPE CARRIER LEAD<br>FRAMES FOR ATTACHMENT OF CHIP COMPONENTS TO THICK FILM HYBRID<br>SUBSTRATES. PROCESS SPECS ARE BEING FINALIZED.  | 169.9                           | 149.9                         | 20.0  |   | OCT 78                                   |
| 3 76 3227B | DETEX SYSTEMS WORK<br>DETEX SYSTEMS IS PROCEEDING WITH UTILIZATION TECHNIQUES.  | 33.0                            | 32.0                          | 0.0   |   | OCT 78                                   |
| 3 76 3227C | MONEYWELL MODIFICATION<br>MONEYWELL WILL BUILD SEVERAL TYPES OF MISSILE HYBRID CIRCUITS TO<br>OBTAIN COST AND RELIABILITY DATA.   | 56.0                            | 55.0                          | 0.0   |   | OCT 78                                   |
| 3 76 3227D | MONEYWELL OPTION<br>MONEYWELL RELEASED PROCESS SPECS ON 8 AREAS   | 339.6                           | 196.0                         | 0.0   |   | OCT 78                                   |
| 3 7T 3228  | *PRODUCTION METHODS FOR EXTRUDABLE MTPB PROPELLANTS<br>ACCOMPLISHMENTS WERE NOT UPDATED FROM LAST REPORT PERIOD.  | 25.0                            | 0.0                           | 25.0  | SEP 78                                    | SEP 78                                   |
| 3 76 3228  | *PRODUCTION METHODS FOR EXTRUDABLE MTPB PROPELLANT<br>ACCOMPLISHMENTS WERE NOT UPDATED FROM LAST REPORT PERIOD.   | 70.0                            | 57.5                          | 11.4  | SEP 78                                    | SEP 78                                   |
| R 78 3228  | PRODUCTION METHODS FOR EXTRUDABLE MTPB PROPELLANT<br>VOIDS IN THE PROPELLANT DURING THE BASIC EFFORT WAS DUE TO<br>ENTRAINED AIR SINCE THE INJECTOR CHAMBER WAS NOT EVACUATED.<br>BALLISTIC DATA SHOWS GOOD BATCH-TO-BATCH REPRODUCIBILITY AS WELL<br>AS MOTOR-TO MOTOR REPRODUCIBILITY. BURN RATES EXCEEDED<br>PREDICTIONS   | 200.0                           | 150.0                         | 6.4   | SEP 79                                    | SEP 79                                   |
| 3 7T 3229  | *METHODOLOGY FOR PRODUCING LOW COST DISPOSABLE MANDRELS<br>THE EFFORT IS BEING CONTINUED UNDER R78 3229.  | 30.0                            | 0.0                           | 30.0  | OCT 78                                    | JUN 78                                   |
| 3 76 3229  | *METHODOLOGY FOR PRODUCING LOW COST DISPOSABLE MANDRELS<br>THE EFFORT IS NOW BEING CONDUCTED UNDER R 78 3229.   | 153.5                           | 153.5                         | 0.0   | OCT 78                                    | OCT 78                                   |
| R 78 3229  | METHODOLOGY FOR PRODUCING LOW COST DISPOSABLE MANDRELS<br>PROCESSING EVALUATION OF CANDIDATE MANDREL MATERIALS HAS BEEN<br>COMPLETED. BALLISTIC BATCH CHECK MOTORS WERE LOADED WITH MANDRELS<br>UNDER CONSIDERATION. COST ANALYSIS FOR REUSABLE VS. DISPOSABLE<br>MANDRELS HAS BEEN COMPLETED. THE CONTRACT HAS BEEN CHANGED. | 275.0                           | 153.5                         | 22.2  | SEP 79                                    | SEP 79                                   |
| 3 76 3230  | *MANUFACTURE METHODS FOR HIGH SPEED MACH OF ALUMINUM<br>METHODS AND TECHNOLOGY FOR HIGH-SPEED MACHINING OF ALUMINUM<br>MISSILE STRUCTURES WERE SUCCESSFULLY DEVELOPED BY THIS PROJ AND<br>ARE CURRENTLY SCHED FOR IMPLEMENTATION IN THE PROD OF CRUISE AND<br>GBRS MISSILE SYS AT GENERAL DYNAMICS AND Vought respectively.   | 242.0                           | 227.0                         | 0.0   | NOV 77                                    | AUG 78                                   |

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
S U M M A R Y P R O J E C T S T A T U S R E P O R T  
18T SEMIANNUAL SUBMISSION CY 78 RCS ORCMT-301

| PROJ NO.  | TITLE + STATUS  | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|-----------|---|--------------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| 3 76 3231 | METHODS FOR THE PRODUCTION OF SQUEEZE CASTINGS<br>SQUEEZE CASTINGS FOR TWO COMPONENTS WERE MADE AND THE INFLUENCE OF VARIOUS TOOLING MODIFICATIONS WERE ESTABLISHED. PRELIMINARY PROCESS SPECS WERE DRAWN.  | 195.2              | 145.2                   | 0.0                                 | JAN 78                           | OCT 78                          |
| 3 77 3232 | COMPUTERIZED PRODUCTION PROCESS PLANNING<br>THE FINAL PROGRAM REVIEW FOR CPPP WAS PRESENTED TO GOVERNMENT AND INDUSTRY REPRESENTATIVES. EFFORTS CONTINUED ON THE COST DRIVERS ANALYSIS. THIS SHOULD RESULT IN A COST DRIVERS BASE-LINE AND FORMAT.  | 275.0              | 243.1                   | 0.0                                 | JUL 77                           | AUG 78                          |
| R 78 3242 | DIGITAL FAULT ISOLATION OF PRINTED CIRCUIT BOARD<br>REQUESTS FOR PROPOSALS WERE MAILED OUT 20 JUNE 78. A CONTRACTOR WILL DEVELOP THE METHODOLOGY FOR ISOLATING FAULTS ON DIGITAL CIRCUIT BOARDS IN A MANUFACTURING ENVIRONMENT.   | 425.0              | 0.0                     | 13.4                                | SEP 79                           | JUN 80                          |
| R 78 3253 | HIGH CURRENT DENSITY CATHODES<br>SPERRY UNIVAC RECEIVED A COST PLUS FIXED FEE CONTRACT ON 7 JULY 78. SPERRY WILL WORK ON PROCESSES FOR MAKING THIN FILM FIELD EMISSION CATHODES FOR ELECTRON TUBES. TUBES ARE FOR MISSILE GUIDANCE AND RADAR.   | 160.0              | 125.8                   | 5.0                                 | JUN 80                           | JUN 80                          |
| R 78 3254 | SEMI-FLEXIBLE THIN FILM SEMICONDUCTORS<br>A PROCUREMENT PACKAGE IS BEING ASSEMBLED. A CONTRACTOR WILL USE OR DEVELOP A COMPUTER CONTROLLED VACUUM METALLIZATION SYSTEM TO DEPOSIT THIN FILM TRANSISTORS AND CONDUCTORS. ONLY FIRMS HAVING/BUYING THE VACUUM EQUIPMENT SHOULD BE CONSIDERED. | 400.0              | 0.0                     | 0.0                                 | JUN 79                           | JUN 79                          |
| R 78 3268 | AUTOMATIC CONTROL OF PLATING<br>THIS PROJECT WILL OPTIMIZE THE ELECTROPLATING PROCESS USED IN MANUFACTURE OF PRINTED WIRING BOARDS BY COMPUTER CONTROL OF THE PROCESS.  | 450.0              | 396.0                   | 54.0                                | OCT 79                           | SEP 79                          |
| 3 77 3287 | PRODUCTION METHODS FOR LOW COST STRIP LAMINATE MOTOR CASES<br>PHASE 4, THE APPLICATION OF REALISTIC NOT METHODS FOR SCREENING CRITICAL DEFECTS, IS NEARING COMPLETION. COMPLETION OF THIS PHASE WILL TERMINATE THIS PROJECT.  | 275.0              | 220.0                   | 55.0                                | DEC 78                           | MAY 79                          |
| R 78 3372 | MANUFACTURING METH. FOR MAGNETIC COMPONENTS<br>A CONTRACT FOR THIS EFFORT IS BEING NEGOTIATED. THE OBJECTIVE OF THIS PROJECT IS TO PROVIDE THE MANUFACTURING TECHNIQUES FOR ELECTROMAGNETIC DEVICES OF SIGNIFICANTLY REDUCED SIZE AND WEIGHT AT A REDUCED COST.                             | 410.0              | 0.0                     | 0.0                                 | OCT 79                           | OCT 79                          |
| R 78 3376 | TESTING ELECTRO-OPTICAL COMPONENTS AND SUBSYSTEMS<br>THE PROCUREMENT PACKAGE HAS BEEN FINALIZED AND THE CONTRACT IS SCHEDULED TO BE AWARDED BY 30 DEC 1978.   | 375.0              | 325.0                   | 10.0                                | DEC 80                           | DEC 80                          |

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
S U M M A R Y R E P O R T S T A T U S R E P O R T  
1ST SEMIANNUAL SUBMISSION CY 78 RCS DRCHT-301

| PROJ NO.  | TITLE + STATUS   | AUTHO-<br>RIZED<br>(8000) | CONTRACT<br>VALUES<br>(8000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(8000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|--|---------------------------|------------------------------|--|---|--|
| R 78 3436 | DEVELOPMENT OF CERAMIC CIRCUIT BOARDS AND LARGE AREA HYBRIDS<br>THE MAJOR OBJECTIVES ARE TO IMPROVE COMPONENT DENSITY AND REDUCE<br>COSTS BY MEANS OF LARGE AREA HYBRIDS AND CERAMIC CIRCUIT BOARDS.<br>CONTRACT AWARD IS EXPECTED BY 30 SEPT 79.  | 325.0                     | 0.0                          | 0.0  | DEC 79                                    | DEC 79                                   |
| R 78 3440 | PRODUCTION TESTING OF CONTROL SYSTEMS FOR GUIDED WEAPONS<br>THE TECHNICAL REQUIREMENTS HAVE BEEN ESTABLISHED AND THE<br>PROCUREMENT PACKAGE IS IN THE PROCESS OF BEING PREPARED. THE<br>CONTRACT IS SCHEDULED TO BE AWARDED IN OCT 1979.   | 550.0                     | 0.0                          | 0.0  | APR 80                                    | MAR 80                                   |
| R 78 3441 | APPLICATION OF HIGH ENERGY LASER MANUFACTURING PROCESSES<br>MODIFICATIONS REQUIRED TO LASER WELD MISSILE CONTAINERS ARE<br>ALMOST COMPLETE. WELDING TESTS HAVE BEEN INITIATED.   | 490.0                     | 140.0                        | 220.0  | SEP 79                                    | SEP 79                                   |
| R 77 3452 | LOW COST QUANTITY PRODUCTION TECHNIQUES FOR LASER SEEKERS<br>THE CONTRACTOR MADE A FORMAL PHASE I PRESENTATION INCLUDING PHASE<br>I MM T PROCESS ANALYSES, MANUFACTURING FACILITIES, ASSEMBLY AND<br>TEST PLANS, AND A DEDICATED ASSEMBLY AREA DESIGN. THE PHASE I<br>INTERIM REPORT WAS APPROVED.       | 1,000.0                   | 910.0                        | 90.0   | SEP 79                                    | AUG 78                                   |
| R 78 3452 | LOW COST QUANTITY PRODUCTION TECHNIQUE FOR LASER SEEKERS<br>MARTIN MARIETTA WILL PRODUCTION ENGINEER AND TOOL THE ALTERNATE<br>HELLFIRE SEEKER HEAD AND THE COPPERHEAD ELECTRONICS PACKAGES.<br>ALIGNMENT FIXTURING WAS DEVELOPED FOR THE SEEKER HEAD GIMBAL.<br>TEST EQUIPMENT WAS BUILT AND CERTIFIED. | 3,000.0                   | 2,990.0                      | 0.0  | AUG 79                                    | OCT 79                                   |
| R 78 3453 | GROUND LASER LOCATOR DESIGNATOR PRODUCTION IMPROVEMENTS<br>A CONTRACTOR WILL BE SELECTED TO PRODUCTION ENGINEER A LASER<br>DESIGNATOR FOR CLGP. HE WILL DEVELOP PRODUCTION PROCESSES AND<br>PROCEDURES FOR THE ELECTRONICS SECTION.  | 211.0                     | 0.0                          | 0.0  | DEC 80                                    | DEC 80                                   |
| R 78 3454 | LO COST - M1 VOLUME RADIOGRAPHIC INSPECTION<br>THE PROCUREMENT PACKAGE WAS FINALIZED AND THE CONTRACT IS<br>SCHEDULED TO BE AWARDED 30 AUGUST 1979.  | 200.0                     | 0.0                          | 0.0  | FEB 80                                    | FEB 80                                   |

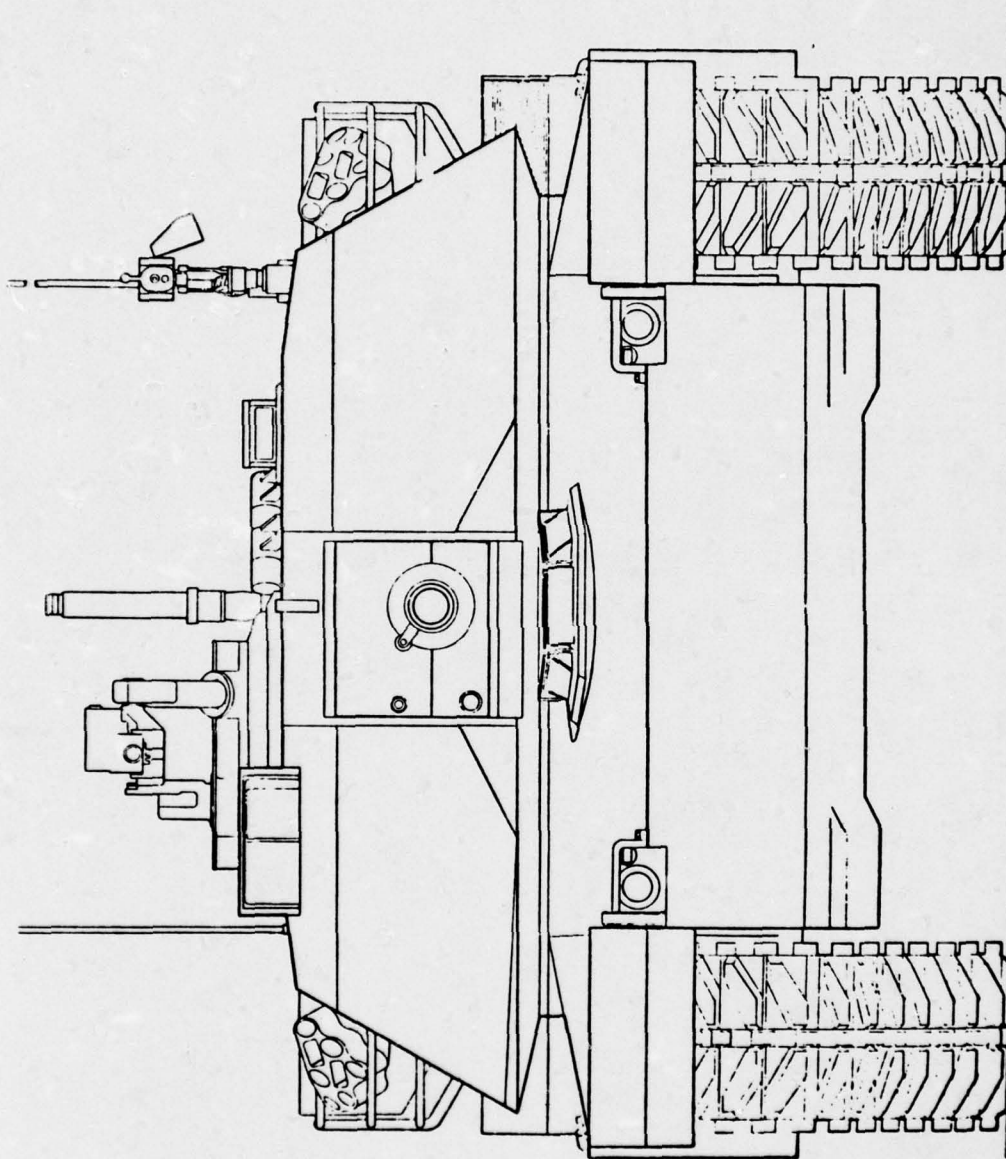


MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
SUMMARY PROJECT STATUS REPORT  
1ST SEMIANNUAL SUBMISSION CY 78 RCB DRCHT-301

| PROJ NO.    | TITLE + STATUS   | AUTHORIZED<br>(\$000) | CONTRACT<br>VALUES<br>(\$000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(\$000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-------------|--|-----------------------|-------------------------------|---|---|--|
| 3 76 3115   | ENGINEERING FOR METROLOGY AND CALIBRATION<br>SEE PROJECT 3 76 3115 FOR STATUS.   | 557.0                 | 369.0                         | 200.0   | SEP 77                                    | DEC 79                                   |
| 3 77 3115   | ENGINEERING FOR METROLOGY AND CALIBRATION<br>SEE PROJECT 3 76 3115 FOR STATUS.   | 594.0                 | 369.0                         | 250.0   | SEP 76                                    | MAR 79                                   |
| 3 78 3115   | ENGINEERING FOR METROLOGY AND CALIBRATION<br>SEE INDIVIDUAL SUBTASK BELOW FOR STATUS   | 681.0                 | 234.0                         | 27.0  | SEP 79                                    | SEP 79                                   |
| 3 78 3115A  | JOSEPHSON EFFECT VOLTAGE STANDARD<br>A PROTOTYPE SYSTEM WAS COMPLETED AND SUBSEQUENTLY DEMONSTRATED.<br>THE CONTRACT FOR PURCHASING FOUR UNITS HAS BEEN FINALIZED AND THE<br>FABRICATION OF THESE UNITS IS UNDERWAY. DELIVERY IS SCHEDULED FOR<br>THE 1ST QUARTER FY 79.                             | 0.0                   | 0.0                           | 0.0   |   | SEP 79                                   |
| 3 78 3115C  | LOW FREQUENCY RMS VOLTMETER<br>THE CONSTRUCTION OF THE PROTOTYPE HARDWARE HAS BEEN COMPLETED. A<br>SPECIAL WAVEFORM GENERATOR WAS CALIBRATED AND USED TO TEST THIS<br>VOLTMETER. THE TEST RESULTS INDICATED A MAXIMUM ERROR OF $\pm 0.09\%$<br>FOR THE RMS WELL WITHIN THE MEASUREMENT UNCERTAINTY.  | 0.0                   | 0.0                           | 0.0   |   | SEP 78                                   |
| 3 78 3115D  | AUTOMATIC AC/DC THERMAL VOLTAGE MEASUREMENT SYSTEM<br>A SEMI-AUTOMATIC SYSTEM HAS BEEN DEVELOPED UTILIZING A 16 BIT<br>MINICOMPUTER, MIDAS INTERFACE MODULES, LOW THERMAL SWITCHING, A<br>DIGITAL LINEAR AMPLIFIER AND NBS DEVELOPED THERMOELEMENT<br>COMPARATOR.                                    | 0.0                   | 0.0                           | 0.0   |   | JAN 79                                   |
| 3 78 3115E1 | PRESSURE TRANSDUCER SYSTEMS<br>HYD. PRESSURE STD. ALL WORK ON A DIELECTRIC TRANSDUCER HAS BEEN<br>HALTED. AN EVALUATION OF LOWER PRESSURE TRANSDUCER HAS SHOWN THE<br>FORCE BALANCE QUARTZ BOURDON TUBE PRINCIPLE. A PROTOTYPE<br>INSTRUMENT IS BEING PURCHASED FOR TESTING.                         | 0.0                   | 0.0                           | 0.0   |   | JUN 80                                   |
| 3 78 3115E2 | PRESSURE TRANSDUCER SYSTEMS<br>PNEUMATIC PRESSURE STD-ON PROTOTYPE INSTR. HAVE BEEN DEVELOPED<br>AND ARE AVAILABLE FOR EVALUATION. ONE PROTOTYPE HAS CAPABILITY TO<br>MEASURE BAROMETRIC PRESSURE, ALT. AND ALT. RATE OF CHANGE (ROC) AND<br>PRESSURE UP TO 250PSIA. THE OTHER DOES NOT MEASURE ROC. | 0.0                   | 0.0                           | 0.0   |   | SEP 80                                   |
| 3 78 3115F  | MICROPROCESSOR TECHNOLOGY<br>APPLY STATE-OF-THE ART MICROPROCESSOR TECH TO ARMY CALIBRATION<br>PROGRAM, FLOATING POINT MATH ROUTINES (24 BIT) HAVE BEEN PERFECTED.<br>THE EXERCISER HAS BEEN RECEIVED. A HIGH SPEED TERMINAL AND HIGHER<br>LEVEL LANGUAGE FOR PROGRAMMING IS BEING PURSUED.          | 0.0                   | 0.0                           | 0.0   |   | JUN 80                                   |

S U M M A R Y P R O J E C T S T A T U S R E P O R T  
1ST SEMIANNUAL SUBMISSION CY 78 RCB DRCHT-301

| PROJ NO.   | TITLE + STATUS   | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|------------|--|--------------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| 3 78 3115G | REPEATABILITY STUDY OF LOW FLOW TURBINE METERS<br>EVALUATE 3/8 INCH TURBINE FLOWMETERS REPEATABILITY IN JP-4 OR MIL-8-70248(RANGE 0.001-0.5GPM). THE EVALUATION OF 12 FLOWMETERS IS APPROXIMATELY ONE-THIRD COMPLETE. THIS EVALUATION WILL BE COMPLETED DURING THE NEXT 6 MONTHS.                                      | 0.0                | 0.0                     | 0.0                                 |                                  | DEC 78                          |
| 3 78 3115H | MODULAR EQUIPMENT CONFIGURATION FOR CALIBRATION + ANALYSIS<br>THE ROTEX MODEL 600/650 CALIBRATOR AND AMPLIFIER HAS BEEN TESTED SUCCESSFULLY FOR LONG TERM STABILITY AND IS CURRENTLY BEING TESTED FOR PRODUCTIVITY CAPABILITIES. THE 4TH QTR, 1979 DELIVERY OF THE NAVY SIGNAL GEN. WILL DELAY THE PROJECT COMPLETION. | 0.0                | 0.0                     | 0.0                                 |                                  | SEP 79                          |
| 3 78 3115I | INSTRUMENT CONTROLLER SYSTEM<br>ALL EQUIP. HAS BEEN RECEIVED EXCEPT THE CRT TERMINALS. THE LIMITED USE OF THE SYSTEM HAS DEMONSTRATED THAT THE CONCEPT OF USING A TIME-SHARED INSTR. CONTROLLER TO CONTROL PROGRAMMABLE INSTR. VIA THE IEEE-48 IS FEASIBLE AND PRACTICAL ALTERNATIVE.                                  | 0.0                | 0.0                     | 0.0                                 |                                  | SEP 78                          |
| 3 78 3115J | ELECTRO-OPTICAL (E-O) AND LASER SYSTEM STANDARDS<br>EFFORT WAS INITIATED TO ACQUIRE A MEASUREMENT CAPABILITY IN THE 8-14 MICROMETER(VIS) INFRARED SPECTRAL REGION WITH EMPHASIS ON 10.6 UM(CO2 LASER). THE DATA REDUCTION USING AN ON-LINE COMPUTER FOR LOW LEVEL-LUMINOUS STANDARD DATA REDUCTION WAS COMPLETED       | 0.0                | 0.0                     | 0.0                                 |                                  | SEP 78                          |
| 3 78 3115K | MODERN ELECTRO OPTICAL TECHNOLOGY<br>NBS DELIVERED A HIGH ACCURACY RADIOMETER AND A LASER STABILIZER TO USAMC. ALL THE PLANNED FY77 GOALS WERE ACCOMPLISHED.   | 0.0                | 0.0                     | 0.0                                 |                                  | SEP 78                          |
| 3 78 3115L | INTERLAB COMPARISONS OF ELECTRO OPTICAL STANDARDS<br>SEE SUBTASK J FOR STATUS.   | 0.0                | 0.0                     | 0.0                                 |                                  | SEP 78                          |
| 3 78 3115M | RF AND MW MEASUREMENTS STANDARDS<br>NBS FABRICATED A STRUDDY HOODING FOR THE SIX PORT DEVICE. A NEW TMM AIRLINE IS BEING USED AS THE REFERENCE PLANE. THE CALIBRATION AND MEASUREMENT PROGRAM ARE NOW ON FLOPPY DISK. A NEW CALIB. TECH HAS BEEN DEvised THAT EXPLOITS SIX-PORT REDUNDANCY.                            | 0.0                | 0.0                     | 0.0                                 |                                  | SEP 78                          |
| 3 78 3115O | TURBINE FLOWMETER DATA HANDLING UNIT<br>THE PROJECT SCOPE OF WORK HAS BEEN PREPARED AND THE PROCUREMENT ACTION HAS BEEN INITIATED.   | 0.0                | 0.0                     | 0.0                                 |                                  | SEP 79                          |
| 3 78 3115P | DYNAMIC MEASUREMENT AND STIMULI<br>IDENTIFY ARMY TEST EQUIP. TO CALIBRATE HIGH SPEED ANALOG-TO-DIGITAL AND DIGITAL-TO-ANALOG. NBS INITIATED DESIGN, FAB., AND TEST WORK ON NUMEROUS ITEMS INCLUDING  | 0.0                | 0.0                     | 0.0                                 |                                  | SEP 78                          |



**TANK-AUTOMOTIVE R&D COMMAND  
(TARADCOM)**

**TANK-AUTOMOTIVE MATERIEL READINESS COMMAND  
(TARCOM)**

CURRENT FUNDING STATUS, 187 FY78

| FISCAL<br>YEAR     | NO. OF<br>PROJECTS | AUTHORIZED<br>FUNDS<br>(\$) | CONTRACT FUNDING       |                       | INHOUSE FUNDING        |                       |
|--------------------|--------------------|-----------------------------|------------------------|-----------------------|------------------------|-----------------------|
|                    |                    |                             | *<br>ALLOCATED<br>(\$) | *<br>EXPENDED<br>(\$) | *<br>ALLOCATED<br>(\$) | *<br>EXPENDED<br>(\$) |
| 74                 | 1                  | 690,000                     | 188,600                | 188,600 (100%)        | 501,400                | 491,800 (98%)         |
| 75                 | 3                  | 370,000                     | 98,000                 | 8,000 (8%)            | 272,000                | 272,000 (100%)        |
| 76                 | 4                  | 675,000                     | 185,800                | 34,000 (18%)          | 489,200                | 289,100 (59%)         |
| 77                 | 0                  | 0                           | 0                      | 0 (0%)                | 0                      | 0 (0%)                |
| 77                 | 8                  | 1,901,000                   | 1,024,400              | 321,500 (31%)         | 876,600                | 423,000 (48%)         |
| 78                 | 11                 | 2,235,000                   | 220,000                | 20,000 (9%)           | 2,015,000              | 29,900 (1%)           |
| TOTAL              | 27                 | 5,671,000                   | 1,716,800              | 572,100 (33%)         | 4,154,200              | 1,505,400 (36%)       |
| AUTHORIZED FUNDING |                    | CONTRACT ALLOCATED 29%      | INHOUSE ALLOCATED 70%  |                       |                        |                       |



MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
SUMMARY PROJECT STATUS REPORT  
1ST SEMIANNUAL SUBMISSION CY 78 RCS ORCMT-301

| PROJ NO.  | TITLE + STATUS  | AUTHORIZED<br>(9000) | CONTRACT<br>VALUES<br>(9000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(9000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|---|----------------------|------------------------------|--|---|--|
| T 78 4264 | TRACK INSERTS AND FILLERS FOR TRACK RUBBER PADS<br>A TEST PLAN HAS BEEN DEVELOPED, A PURCHASE REQUEST HAS BEEN<br>DISTRIBUTED TO THE APPROPRIATE INDUSTRIES FOR BIDDING ON THE<br>FABRICATION OF SAMPLE PADS.   | 200.0                | 60.0                         | 13.5   | AUG 78                                    | OCT 80                                   |
| 4 75 4330 | FABRICATION OF ARMORED VEHICLES BY ELECTRON BEAM WELDING<br>GRUMMAN AEROSPACE COMPLETED FABRICATION OF THE SIMULATED M113<br>HULL, THE FINAL REPORT HAS BEEN DISTRIBUTED.   | 100.0                | 90.0                         | 10.0   | NOV 75                                    | JUN 78                                   |
| 4 76 4330 | FABRICATION OF ARMORED VEHICLES BY ELECTRON BEAM WELDING<br>GRUMMAN AEROSPACE HAS COMPLETED FABRICATION OF THE SIMULATED<br>M113 HULL AND DELIVERED IT TO TARADCOM, THE FINAL REPORT WAS<br>DISTRIBUTED.  | 100.0                | 58.6                         | 38.1   | JUL 77                                    | JUN 78                                   |
| 4 75 4391 | *ISOTHERM HEAT TREAT F/HIGH STRENGTH DUCTILE IRON CAST-8PH 2<br>ALL WORK COMPLETED, THE DURABILITY OF THE AUSTEMPERED CAST<br>DUCTILE IRON COMPONENTS ARE INFERIOR TO STANDARD FORGED<br>COMPONENTS, THE CAST COMPONENTS ARE NOT RECOMMENDED FOR LOW<br>TEMPERATURE APPLICATION.  | 150.0                | 8.0                          | 142.0  | JUN 76                                    | JUN 78                                   |
| 4 76 4392 | JOINING DISSIMILAR METALS-PHASE 2-<br>WELD SPECIMENS ARE BEING WELDED AND SHOULD BE COMPLETED IN<br>AUGUST.   | 125.0                | 0.0                          | 77.0   | SEP 77                                    | MAR 79                                   |
| 4 76 4395 | *IMPROVED SEATS FOR MILITARY VEHICLES<br>ALL DATA WAS EVALUATED AND THE FINAL REPORT WAS PREPARED, D AND<br>CONSTRUCTED, AND ASSEMBLY IS PARTIALLY COMPLETE, ELECTRONIC CO  | 125.0                | 0.0                          | 115.0  | APR 78                                    | JUN 78                                   |
| 4 75 4512 | *AUTOMATED WELDING OF HULL STRUCTURES- MORE THAN ONE AXIS<br>ALL WORK IS COMPLETED, A FINAL REPORT IS BEING COMPLETED BY<br>TARADCOM, AN AUTOMATIC GAS METAL ARC WELDING MACHINE USING<br>STANDARD COMPONENTRY WAS DESIGNED AND FABRICATED, AN EDDY CURRENT<br>SENSING PROBE WAS COUPLED TO A MINICOMPUTER TO DIRECT THE EQUIP. | 120.0                | 0.0                          | 120.0  | AUG 76                                    | JUL 78                                   |
| 4 74 4548 | *PROC ESR STEEL P/IMPROVED HOMOGENEOUS ARMORPH 1 + 2<br>ALL WORK COMPLETED, A FINAL REPORT IS BEING PREPARED, TECHNIQUES<br>TO PRODUCE IMPROVED ESR ARMOR HAVE BEEN DEVELOPED.  | 690.0                | 188.6                        | 491.4  | FEB 75                                    | JUN 78                                   |
| T 77 4557 | PROD METHOD FOR M1 EFFICIENCY JOINING OF ESR ARMOR-PHASE 2<br>THE TEST M-PLATES HAVE BEEN WELDED AND SHIPPED TO APG FOR FIRING,<br>FIRING IS SCHEDULED FOR SEPTEMBER.   | 150.0                | 0.0                          | 111.0  | DEC 78                                    | AUG 78                                   |
| 4 76 4563 | ROTATIONAL HOLDING OF LARGE CAPACITY FUEL TANKS,<br>CONTRACT WAS AWARDED, MOLDS AND INSERTS WERE COMPLETED FOR THE<br>M551 TANK, AND PRODUCTION WAS INITIATED, TOOLING FOR THE MOLDS<br>FOR THE M88 FUEL TANKS IS IN PROGRESS, COST ANALYSIS FOR CURRENT<br>FUEL TANKS IS ALSO IN PROGRESS.                                     | 325.0                | 127.0                        | 99.0   | APR 76                                    | SEP 79                                   |

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
S U M M A R Y P R O J E C T S T A T U S R E P O R T  
1ST SEMIANNUAL SUBMISSION CY 78 RCS DRCHT-301

| PROJ NO.  | TITLE + STATUS   | AUTHOR-<br>RIZED | CONTRACT<br>VALUES | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(8000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|--|------------------|--------------------|--|---|--|
| T 76 4375 | LASER WELDING TECHNIQUES FOR MILITARY VEHICLES(PHASE I)<br>PROCUREMENT ACTION HAS BEEN INITIATED.  | 175.0            | 0.0                | 0.0  | MAY 79                                    | MAY 79                                   |
| T 77 4589 | METRICATION<br>A TARCOM/TARADCOM METRIC CHANGEOVER PLAN IS BEING REVISED. THE<br>WORK ON THE METRICATION MANUAL WAS DISCONTINUED DUE TO LACK OF<br>FUNDS. THE PROGRESS OF INDUSTRY'S CHANGEOVER IS CONTINUING TO BE<br>ACTIVELY MONITORED.   | 271.0            | 166.8              | 74.0   | MAY 78                                    | SEP 78                                   |
| T 77 5014 | IMPROVED FOUNDRY CASTINGS UTILIZING CAM<br>RPP HAS BEEN ISSUED.  | 250.0            | 0.0                | 36.0   | SEP 79                                    | NOV 79                                   |
| T 76 5014 | IMPROVED FOUNDRY CASTING UTILIZING CAM<br>RPP HAS BEEN ISSUED.   | 225.0            | 0.0                | 0.0  | JAN 81                                    | JAN 81                                   |
| T 77 5017 | AUTO GAS METAL ARC WELDING OF ALUMINUM HULL STRUCTURE<br>WELDING PARAMETER DEVELOPMENT IS PRESENTLY UNDERWAY. THE SCHEDULE<br>WAS REVISED. A PERMANENT PROJECT ENGINEER WILL BE ASSIGNED TO THE<br>PROJECT.  | 100.0            | 0.0                | 33.0   | AUG 79                                    | SEP 80                                   |
| T 76 5017 | AUTO GAS METAL ARC WELDING OF ALUMINUM HULL STRUCTURE<br>WELDING PARAMETERS ARE BEING DEVELOPED.   | 100.0            | 0.0                | 0.0  | SEP 78                                    | SEP 80                                   |
| 4 77 5019 | MAINTENANCE FREE STORAGE BATTERY-PH 1<br>COMPONENT PARTS OF THE BATTERY HAVE BEEN FABRICATED AND TESTED<br>SUCCESSFULLY. ASSEMBLY OF THE BATTERIES IS IN PROGRESS.   | 140.0            | 75.5               | 43.0   | OCT 78                                    | AUG 78                                   |
| 4 76 5019 | PLASTIC CONTAINER FOR LOW MAINTENANCE DRY CHARGED BATTERY<br>PREPARATIONS ARE BEING MADE FOR TESTING BATTERY COMPONENTS AND<br>ASSEMBLED BATTERIES RESULTING FROM PHASE I (4-77-5019) OF THE<br>PROGRAM.   | 160.0            | 0.0                | 3.0  | JUL 78                                    | SEP 79                                   |
| T 76 5024 | CAM GEAR DIE DESIGN AND MANUFACTURING PHASE I.<br>THE PROCUREMENT REQUEST IS BEING PREPARED.   | 200.0            | 0.0                | 1.0  | JUN 80                                    | JUN 80                                   |
| T 76 5062 | PRODUCTION OF ARMORED VEHICLE VISION BLOCKS<br>TARADCOM AND AMHRC SET THE THREAT LEVEL FOR MISSION BLOCKS IN<br>ARMORED VEHICLES. THEY ALSO SELECTED THE BEST COMBINATION OF<br>TRANSPARENCIES FOR THIS BALLISTIC THREAT. HARD GLASS,<br>POLYCARBONATE, SAPPHIRE AND ANNEALED GLASS WERE CONSIDERED. | 130.0            | 110.0              | 4.7  | SEP 79                                    | SEP 79                                   |
| T 76 5064 | LIGHT HEIGHT SADDLE TANK<br>PROCUREMENT PACKAGE HAS BEEN COMPLETED, AND SUBMITTED TO<br>PROCUREMENT FOR EXECUTION.   | 90.0             | 50.0               | 5.0  | JUL 78                                    | AUG 79                                   |

MANUFACTURING METHODS AND TECHNOLOGY PROGRAM  
SUMMARY PROJECT STATUS REPORT  
1ST SEMI-ANNUAL SUBMISSION CY 78 RCM DRCMT-301

| PROJ NO.  | TITLE + STATUS   | AUTHORIZED (\$000) | CONTRACT VALUES (\$000) | EXPENDED LABOR AND MATERIAL (\$000) | ORIGINAL PROJECTED COMPLETE DATE | PRESENT PROJECTED COMPLETE DATE |
|-----------|--|--------------------|-------------------------|-------------------------------------|----------------------------------|---------------------------------|
| T 77 5083 | UPSCALING OF ADVANCED POWDER METALLURGY PROCESSES<br>A DIE FOR ISOTHERMALLY FORGING TEST COUPONS HAS BEEN ASSEMBLED.   | 215.0              | 149.0                   | 66.0                                | MAY 79                           | MAY 79                          |
| T 78 5083 | UPSCALING OF ADVANCED POWDER METALLURGY PROCESSES<br>A PROCUREMENT REQUEST WAS PREPARED AND SUBMITTED TO PROCUREMENT FOR ACTION.   | 325.0              | 0.0                     | 1.5                                 | MAR 79                           | MAR 79                          |
| T 77 5085 | PRODUCTION TECHNIQUES F/FABRICATION OF TURBINE RECUPERATOR<br>A CONTRACT HAS BEEN AWARDED TO AVCO LYCOMING, A PROTOTYPE WELD STATION HAS BEEN DESIGNED AND ASSEMBLED. PROBLEMS IN PROGRAMMING WELDING PATH FOR THE LASER HAVE RESULTED IN A 3 MONTH DELAY. | 400.0              | 309.0                   | 30.0                                | NOV 78                           | JAN 79                          |
| T 78 5085 | PRODUCTION TECHNIQUES FOR FABRICATION OF TURBINE RECUPERATOR<br>SEE STATUS FOR T 77 5085.  | 380.0              | 0.0                     | 1.0                                 | JAN 80                           | JAN 80                          |
| T 77 5097 | INTEGRALLY CAST LOW COST COMPRESSOR<br>A CONTRACT WAS LET. INITIAL REVISION OF THE IMPELLER WAS BEGUN.   | 375.0              | 324.1                   | 30.0                                | JUN 79                           | JUN 79                          |
| T 78 5097 | INTEGRALLY CAST LOW COST COMPRESSOR (PHASE II)<br>PROCUREMENT REQUEST WAS COMPLETED.   | 250.0              | 0.0                     | 0.2                                 | JUN 80                           | JUN 80                          |

## APPENDICES



## APPENDIX I: Command Identification

# APPENDIX I: ARMY ACTION COMMAND/ACTIVITY IDENTIFICATION

| <u>Action Command</u>                           | <u>Acronym</u>     | <u>First Digit of MMT<br/>Project Number</u> |
|---|--------------------|--|
| Materiel Development<br>& Readiness Command     | DARCOM             | D  |
| Test & Evaluation Command                       | TECOM              | 0  |
| Aviation R&D Command                            | AVRADCOM           | 1  |
| Communications R&D Command                      | CORADCOM           | F  |
| Electronics R&D Command                         | ERADCOM            | H  |
| Communications &<br>Electronics Command         | CERCOM             | 2  |
| Missile R&D Command                             | MIRADCOM           | R  |
| Missile MR Command                              | MIRCOM             | 3  |
| Tank-Automotive R&D<br>Command                  | TARADCOM           | T  |
| Tank-Automotive MR<br>Command                   | TARCOM             | 4  |
| Armament R&D Command<br>(Munitions)             | ARRADCOM<br>(Ammo) | 8  |
| Armament MR Command<br>(Munitions)              | ARRCOM<br>(Ammo)   | 5  |
| Armament R&D Command<br>(Weapons)               | ARRADCOM<br>(Wpns) | 9  |
| Armament MR Command<br>(Weapons)                | ARRCOM<br>(Wpns)   | 6  |
| Mobility Equipment<br>R&D Command               | MERADCOM           | E  |
| Army Materials and<br>Mechanics Research Center | AMMRC              | M  |
| Natick R&D Command                              | NARADCOM           | Q  |

NOTE: Abbreviation: R&D Research and Development  
MR Materiel Readiness

## APENDIX II: User's Guide

S U M M A R Y P R O J E C T S T A T U S R E P O R T  
1ST SEMI ANNUAL SUBMISSION CY 78 RCS DRCHT-301

| PROJ NO.  | TITLE + STATUS  | AUTHO-<br>RIZED | CONTRACT<br>VALUES<br>(\$000) | EXPENDED<br>LABOR<br>AND<br>MATERIAL<br>(\$000) | ORIGINAL<br>PROJECTED<br>COMPLETE<br>DATE | PRESENT<br>PROJECTED<br>COMPLETE<br>DATE |
|-----------|---|-----------------|-------------------------------|---|---|--|
|           |   |                 |                               |   |   |  |
| 5 78 6774 | MFG METHOD FOR APDS PROJECTILE (25MM)<br>INITIATED PRELIM CONTRACT FOR DEVELOPMENT OF 25MM PROJECTILE.<br>S.O.W. DEVELOPED FOR PLASTIC SABOT. | 300.0           | 150.0                         | 30.2  | NOV 79                                    | NOV 79                                   |
| 5 77 6777 | DEVELOPMENT OF PROD PROC- 105MM XM710E1 PROJECTILE METAL PTS<br>CONTRACTOR WAS SUBMITTED A DRAFT FINAL REPORT.                                | 500.0           | 49.8                          | 340.9   | MAR 78                                    | JUN 78                                   |

(1) (2) (3) (4)

(5)

(6)

(7)

(8)

(9)

(10)

THIS FORM IS USED FOR SUMMARIZING  
THE MMT PROGRAM PROJECTS STATUS.  
USER'S GUIDE BELOW EXPLAINS THE  
SIGNIFICANCE OF EACH COLUMN HEREIN.



USER'S GUIDE  
to  
SUMMARY PROJECT STATUS REPORT

|                                       |  |  |   |
|---------------------------------------|--|--|---|
| COLUMN 1. <u>PROJECT NUMBER</u>       | A project is identified by the first and last four digits which corresponds to the project title for the life of its execution. However, for accounting and reporting purposes, a project is recognized by the totality of its seven-digit numeral or alphanumeric number. Example:<br><br>3 75 6241 | COLUMN 5. <u>STATUS</u>                              | An abstract of project status taken from the RCS DRCMT-301 report. Whenever possible, the technical accomplishments during the reporting period were summarized.          |
|                                       | Project identifying number, which corresponds to the project title and is designated by action command.  | COLUMN 6. <u>AUTHORIZED</u>                          | The total amount of funds authorized in dollars, to complete the project.   |
|                                       | Fiscal year of funding - the only two digits that may vary according to funding frequency (7T for FY transition).  | COLUMN 7. <u>CONTRACT VALUES</u>                     | The portion of authorized funds actually expended or obligated for work performed by private industry.  |
|                                       | Action command (see list accompanying Introduction).   | COLUMN 8. <u>EXPENDED LABOR AND MATERIAL</u>         | The portion of authorized funds actually expended or obligated in-house, namely within the Government.  |
| COLUMN 2. Subtask identifier, if any. |  | COLUMN 9. <u>ORIGINAL PROJECTED DATE OF COMPLETE</u> | Calendar date clearly given in, or the nearest calendar month and year as could be read from the Milestone Chart of, the very first Project Status Report, RCS DRCMT-301. |
| COLUMN 3. Asterisk (*)                | When it appears in this column, the star mark signifies that a properly labeled Final Project Status Report, RCS DRCMT-301, was received at IBEA. Such a project may be final for any fiscal year, and will not appear in subsequent Semi-annual Report.   | COLUMN 10. <u>PRESENT PROJECTED DATE OF COMPLETE</u> | Calendar date clearly given in, or the nearest calendar month and year as could be read from the Milestone Chart of, the latest Project Status Report, RCS DRCMT-301.     |
| COLUMN 4. <u>PROJECT TITLE</u>        | The title descriptive of project effort.   |  |   |

**APPENDIX III: Army MMT Program  
Representatives**

ARMY MM&T PROGRAM REPRESENTATIVES

HQ, DARCOM

US Army Materiel Development and Readiness Command

ATTN: DRCMT

5001 Eisenhower Avenue

Alexandria, VA 22333

C: 202 274-8284/8298

AV: 284-8284/8298

AVRADCOM

US Army Aviation Systems R&D Command

ATTN: DRDAV-EXT, Mr. Robert Vollmer

12th & Spruce Streets

St. Louis, MO 63166

C: 314 268-6476

AV: 698-6476

CERCOM

US Army Communications & Electronics Materiel Readiness Command

ATTN: DRSEL-LE-R, Mr. Martin Ides

Ft. Monmouth, NJ 07703

C: 201 532-4752

AV: 992-4752

CORADCOM

US Army Communications R&D Command

ATTN: DRDCO-PPA-TP, Mr. Sam Esposito

Ft. Monmouth, NJ 07703

C: 201 532-2418

AV: 995-2418

ERADCOM

US Army Electronics R&D Command

ATTN: DELET-DS, Mr. Joseph Key/Bernie Reich

Fort Monmouth, NJ 07703

C: 202 394-3330

AV: 290-3300/1/2/3/4

MIRADCOM

US Army Missile R&D Command

ATTN: DRDMI-EAT, Mr. Ray Farrison

Redstone Arsenal, AL 35809

C: 205 876-1835

AV: 746-1835

MIRCOM

US Army Missile Materiel Readiness Command

ATTN: DRSMI-NSS, Mr. Alfred H. James

Redstone Arsenal, AL 35809

C: 205 876-3025

AV: 746-3025

TARADCOM

US Army Tank-Automotive R&D Command

ATTN: DRDTA-R, COL Warren T. Palmer

Warren, MI 48090

C: 313 573-2387/2548

AV: 273-2387/2548

TARCOM

US Army Tank-Automotive Materiel Readiness Command

ATTN: DRSTA-EB, Mr. Basel Armstead

Warren, MI 48090

C: 313 573-2485

AV: 273-2485

ARRCOM

US Army Armament Materiel Readiness Command  
ATTN: DRSAR-IRB, Mr. August Zahatko  
Rock Island Arsenal  
Rock Island, IL 61299

C: 309 794-4485/3730  
AV: 793-4485/3730

ARRADCOM

US Army Armament R&D Command  
ATTN: DJDAR-PML, Mr. Donald J. Fischer  
Dover, NJ 07801

C: 201 328-6714  
AV: 880-6714

TSARCOM

US Army Troop Support and Aviation Command  
ATTN: DRSTS-PLC, Mr. Don G. Doll  
4500 Goodfellow Blvd.  
St. Louis, MO 63120

C: 314 263-3040  
AV: 693-3040

MERADCOM

US Army Mobility Equipment R&D Command  
ATTN: DRDME-U, Mr. S. O. Newman  
Ft. Belvoir, VA 22060

C: 703 664-4221  
AV: 354-4221

NARADCOM

US Army Natick R&D Command  
ATTN: DRDNA-Z, Mr. Edward F. Levell  
Natick, MA 01760

C: 617 653-1000, x2793/4  
AV: 955-2349/2351

TECOM

US Army Test & Evaluation Command  
ATTN: DRSTE-ME, Mr. Grover Shelton  
Aberdeen Proving Ground, MD 21005

C: 301 278-2170/3677  
AV: 283-2170/3677

AMMRC

US Army Materials & Mechanics Research Center  
ATTN: DRXMR-PT, Mr. Raymond Farrow  
Watertown, MA 02172

C: 617 923-3523  
AV: 955-3523

HDL

Harry Diamond Laboratories  
ATTN: DELHD-PP, Mr. Julius Hoke  
2800 Powder Mill Road  
Adelphi, MD 20783

C: 202 394-2755/1551  
AV: 290-2755/1551

Rock Island Arsenal

ATTN: SARRI-EN, Mr. Joseph DiBenedetto  
Rock Island, IL 61299

C: 309 794-4627  
AV: 793-4627

Watervliet Arsenal

ATTN: SARWV-PPI, Mr. L. A. Jette  
Watervliet, NY 12189

C: 518 266-5318  
AV: 794-5318



PM for Ammunition Production Base  
Modernization and Expansion  
ATTN: DRCPM-PBM-DP, Mr. Darold L. Griffin  
Dover, NJ 07801

C: 201 328-6708  
AV: 880-6708

AMRDL  
US Army Air Mobility R&D Laboratories  
ATTN: SAVDL-TAS, Mr. L. Thomas Mazza  
Ft. Eustis, VA 23604

C: 804 878-5732/4304  
AV: 927-5732/4304

IBEA  
US Army Industrial Base Engineering Activity  
ATTN: DRXIB-MT, Mr. James Carstens  
Rock Island, IL 61299

C: 309 794-5113  
AV: 793-5113

DCSRDA  
ATTN: DAMA-CSM, Mr. Rod Vawter  
Room 3C400, The Pentagon  
Washington, DC 20310

C: 202 695-0506/07/08  
AV: 225-0506/07/08

DCSRDA (PA 1497, Aircraft)  
ATTN: DAMA-WSA, LTC R. W. Waddell  
Room 3B454, The Pentagon  
Washington, DC 20310

C: 202 695-1362  
AV: 225-1362

DCSRDA (PA 2597, Missiles)  
ATTN: DAMA-WSM-A, LTC Horton  
Room 3B485, The Pentagon  
Washington, DC 20310

C: 202 697-6412  
AV: 227-6412

DCSRDA (PA 3297, Weapons; PA 3197, Tracked Combat Vehicles)  
ATTN: DAMA-WSW, MAJ Gordon Winder  
Room 3D455, The Pentagon  
Washington, DC 20310

C: 202 697-0106  
AV: 227-0106

DCSRDA (PA 5297, Communications/Electronics)  
ATTN: DAMA-CSC-BU, LTC D. L. Chilcote  
Room 3D440, The Pentagon  
Washington, DC 20310

C: 202 695-1881  
AV: 225-1881

DCSRDA (Other Procurement Activities:  
PA 5197, Tactical and Support Vehicles)  
ATTN: DAMA-CSS, LTC L. R. Hawkins  
Room 3D416, The Pentagon  
Washington, DC 20310

C: 202 695-1891  
AV: 225-1891

DCSRDA (Other Procurement Activities:  
PA 5397, Other Support)  
ATTN: DAMA-CSS, LTC P. K. Linscott  
Room 3D418, The Pentagon  
Washington, DC 20310

C: 202 695-0714  
AV: 225-0714

DCSRDA (PA 4950, Ammunition)  
ATTN: DAMA-CSM-P, Mr. Jack King  
Room 3C444, The Pentagon  
Washington, DC 20310

C: 202 694-4131/32/33/34  
AV: 224-4131/32/33/34

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HQDA, ODCSRDA, The Pentagon, Attn: DAMA-PPM-P, Mr. Rod Vawter

HQDARCOM:

Cdr, DARCOM, Attn: DRCCG

Cdr, DARCOM, Attn: DRCDMD

Cdr, DARCOM, Attn: DRCDMR

Cdr, DARCOM, Attn: DRCPD

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Cdr, DARCOM, Attn: DRCDT (20 cys)

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PM, Aircraft Survivability Equipment (ASE), Attn: DRCPM-ASE (AVRADCOM)

PM, Amphibians and Watercraft (AWC), Attn: DRCPM-AWC (TSARCOM)

PM, Armored Combat Vehicle Technology (ACVT), Attn: DRCPM-CVT (TARADCOM)

PM, Army Container-Oriented Distribution System (ACODS), Attn: DRCPM-CS (DARCOM)

PM, Army Tactical Communications Systems (ATACS), Attn: DRCPM-ATC (CORADCOM)

PM, Army Tactical Data Systems (ARTADS), Attn: DRCPM-TDS (CORADCOM)

PM, Automatic Test Support Systems, Attn: DRCPM-ATSS (CORADCOM)

PM, Blackhawk, Attn: DRCPM-BH (AVRADCOM)

PM, Cannon Artillery Weapons Systems, Attn: DRCPM-CAWS (ARRADCOM)

PM, CH-47 Mod. Program, Attn: DRCPM-CH47M (AVRADCOM)

PM, CHAPARRAL/FAAR, Attn: DRCPM-CF (MIRCOM)

PM, Chemical Demilitarization & Installation Restoration, Attn: DRCPM-DR (APG)

PM, COBRA, Attn: DRCPM-CO (TSARCOM)

PM, DCS (Army) Communications Systems, Attn: DRCPM-COM (ERADCOM)

PM, Division Air Defense (DIVAD) Gun, Attn: DRCPM-ADG (ARRADCOM)

PM, Family of Military Engr. Construc. Equip. (FAMECE)/Univsl. Engr. Tractor (UET), Attn: DRCPM-FM (MERADCOM)

PM, Fighting Vehicle Armament, Attn: DRCPM-FVA (TARADCOM)

PM, Fighting Vehicle Systems, Attn: DRCPM-FVS (TARADCOM)

PM, FIREFINDER, Attn: DRCPM-FF (ERADCOM)

PM, General Support Rocket System, Attn: DRCPM-RS (MIRADCOM)

PM, Ground Laser Designators, Attn: DRCPM-LD (MIRADCOM)

PM, HAWK, Attn: DRCPM-HA (MIRCOM)

PM, Heavy Equipment Transporter (HET), Attn: DRCPM-HT (TARCOM)

PM, Heliborne Laser Fire and Forget (HELLFIRE) Missile System, Attn: DRCPM-HE (MIRADCOM)

PM, High Energy Laser System, Attn: DRCPM-HEL (MIRADCOM)

PM, Improved TOW Vehicle, Attn: DRCPM-ITV (TARADCOM)

PM, LANCE, Attn: DRCPM-LC (MIRCOM)

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PM, M60 Tank Production, Attn: DRCPM-M60TP (TARCOM)  
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ATTN: DRCPM-CARS (CORADCOM)  
PM, Smoke/Obscurants (SMOKE), Attn: DRCPM-SMK (APG)  
PM, Special Electronic Mission Aircraft (SEMA), Attn: DRCPM-AE (TSARCOM)  
PM, Stand-off Target Acquisition System, Attn: DRCPM-STA (ERADCOM)  
PM, STINGER, Attn: DRCPM-MP (MIRADCOM)  
PM, TOW-Dragon, Attn: DRCPM-DT (MIRCOM)  
PM, Training Devices, Attn: DRCPM-TND (Orlando, FL)  
PM, US ROLAND, Attn: DRCPM-ROL (MIRADCOM)  
PM, VIPER, Attn: DRCPM-VI (MIRADCOM)  
PM, XM-1 Tank System, Attn: DRCPM-GCM (TARADCOM)

Project Officers:

PO, Joint Services Interior Intrusion Detection System (J-SIIDS),  
Attn: DRSTS-KJ  
PO, M60A1 Tank Camouflage Pilot Program, Attn: DRXFB-RT  
PO, SLUFAE/SLUMINE, Surface Launch Unit Fuel Air Explosive (SLUFAE) Mine  
Neutralization System/Surface Launched Unit Mine (SLUMINE) Dispensing  
System, Attn: DRDME-NS (Ft. Belvoir)  
PO, Stand-Off Target Acquisition/Attack System (SOTAS), Attn: DRSEL-CT  
PO, Test, Measurement, and Diagnostic Equipment, Attn: DRCRE-T (DARCOM)  
PO, Tactical Shelters, Attn: DRXNM-UBS

Major Subcommands:

Cdr, ARRCOM, Attn: DRSAR-CG  
Cdr, ARRADCOM, Attn: DRDAR  
Cdr, ARRADCOM, Attn: DRDAR-TDA, Mr. Joe Blick  
Cdr, AVRADCOM, Attn: DRDAV  
Cdr, CERCOM, Attn: DRSEL  
Cdr, CORADCOM, Attn: DRDCO  
Cdr, DESCOM, Attn: DRSDS-PMI, Mr. Allen Updegrave  
Cdr, ERADCOM, Attn: DRDEL



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Cdr, TARCOM, Attn: DRSTA  
Cdr, TECOM, Attn: DRSTE  
Cdr, TSARCOM, Attn: DRSTS  
Cdr, MERADCOM, Attn: DRDME  
Cdr, NARADCOM, Attn: DRDNA  
Dir, USAILCOM, Attn: DRCIL

Arsenals:

Cdr, Pine Bluff Arsenal (PBA), Attn: SARPB  
Cdr, Rock Island Arsenal (RIA), Attn: SARRI-CO  
Cdr, Rocky Mountain Arsenal (RMA), Attn: SARRM  
Cdr, Watervliet Arsenal (WVA), Attn: SARWV

Army Ammunition Plants:

Cdr, Crane AAP, Attn: SARCN  
Cdr, Hawthorne AAP, Attn: SARHW  
Cdr, Holston AAP, Attn: SARHO  
Cdr, Indiana AAP, Attn: SARIN  
Cdr, Iowa AAP, Attn: SARIO  
Cdr, Kansas AAP, Attn: SARKA  
Cdr, Lake City AAP, Attn: SARLC  
Cdr, Lone Star AAP, Attn: SARLS  
Cdr, Longhorn AAP, Attn: SARLO  
Cdr, Louisiana AAP, Attn: SARLA  
Cdr, McAlester AAP, Attn: SARMC  
Cdr, Milan AAP, Attn: SARMI  
Cdr, Mississippi AAP, Attn: SARMS  
Cdr, Radford AAP, Attn: SARRA  
Cdr, Riverbank AAP, Attn: SARRB  
Cdr, Scranton AAP, Attn: SARSC

Depots:

Cdr, Anniston Army Depot, Attn: SDSAN  
Cdr, Corpus Christi Army Depot, Attn: SDSCC  
Cdr, Hawthorne Army Depot, Attn: SDSHW, Hawthorne, NV 89415  
Cdr, Letterkenny Army Depot, Attn: SDSLE  
Cdr, McAlester Army Depot, Attn: SDSMC, McAlester, OK 74501  
Cdr, New Cumberland Army Depot, Attn: SDSNC  
Cdr, Red River Army Depot, Attn: SDSRR  
Cdr, Sacramento Army Depot, Attn: SDSSA  
Cdr, Seneca Army Depot, Attn: SDSSE  
Cdr, Sharpe Army Depot, Attn: SDSSH  
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